SOIL SURVEY OF

Clay County, Alabama

United States Department of Agriculture
Soil Conservation Service and Forest Service
In cooperation with
Alabama Department of Agriculture and Industries
Alabama Agricultural Experiment Station

Issued July 1974

Major fieldwork for this soil survey was done in the period 1968–70. Soil names and descriptions were approved in 1971. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1970. This survey was made cooperatively by the Soil Conservation Service, the Forest Service, the Alabama Department of Agriculture and Industries, and the Alabama Agricultural Experiment Station. It is part of the technical assistance furnished to the Clay County Soil and Water Conservation District.

Either enlarged or reduced copies of the soil map in this publication can be made by commercial photographers, or they can be purchased on individual order from the Cartographic Division, Soil Conservation Service, United States Department of Agriculture, Washington, D.C. 20250.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of Clay County are shown on the detailed map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the county in alphabetic order by map symbol and gives the capability classification of each. It also shows the page where each soil is described and gives the woodland suitability group in which the soil has been placed.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils from the soil descriptions and from the discussions of the woodland suitability groups.

Foresters and others can refer to the section "Use of the Soils for Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers, sportsmen, and others can find information about soils and wildlife in the section "Use of the Soils for Wildlife."

Community planners and others can read about soil properties that affect the choice of sites for dwellings, industrial buildings, and recreation areas in the section "Town and Country Planning."

Engineers and builders can find, under "Engineering Uses of the Soils," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices.

Scientists and others can read about how the soils formed and how they are classified in the section "Formation and Classification of the Soils."

Newcomers in Clay County may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the information about the county given at the beginning of the publication.

Cover: **Fescue and clover pasture in an area of Chewacla-Riverview complex. The woodland is in an area of Madison-Tallapoosa-Tusquitee association, steep.**

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Contents

SOIL SURVEY OF CLAY COUNTY, ALABAMA

BY ROBERT B. McNUTT AND LAWSON D. SPIVEY, JR., SOIL CONSERVATION SERVICE, AND JARRELL F. AUSTIN, FOREST SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE AND FOREST SERVICE, IN COOPERATION WITH THE ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES AND THE ALABAMA AGRICULTURAL EXPERIMENT STATION

CLAY COUNTY is in the east-central part of Alabama (fig. 1). It covers a land area of 603 square miles, or 385,920 acres. In 1970 the population was 12,083, as compared with 12,400 in 1960. The county was established by the legislature on December 7, 1866. Its lands were part of the last Creek Indian cession. Ashland is the county seat.

Clay County is entirely within the Piedmont Plateau and is underlain by igneous and metamorphic rocks. Elevations range from about 700 feet in the south-central part of the county to about 2,400 feet in the north-central part.

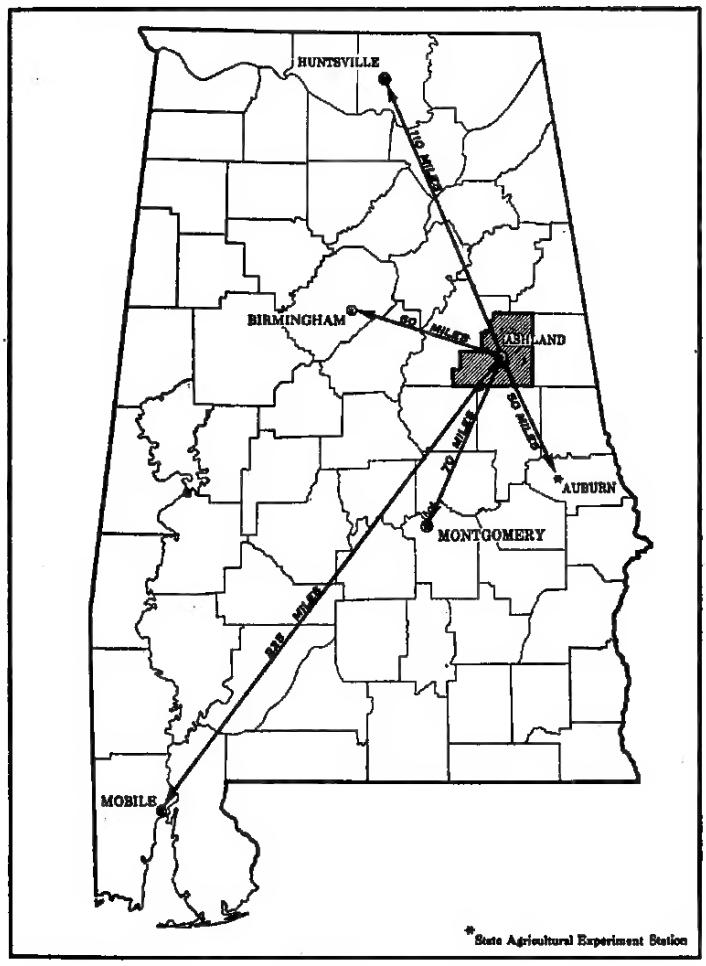

Figure 1.—Location of Clay County in Alabama.

About 82 percent of the county is in woodland. Many of the soils are so steep and susceptible to erosion that they are not suited to row crops or pasture. Nearly all of the soils are acid and low in natural fertility and content of organic matter. Field crops and pasture grown on these soils generally respond well to applications of fertilizer and lime.

Pasture, corn, and hay are the main uses of the open land. Beef cattle, dairy cattle, and hogs are the principal livestock. In recent years the number of farms and acreage in crops have greatly decreased.

The eastern three-fourths of the county is drained by the Tallapoosa River and its tributaries, and the western one-fourth by the Coosa River and its tributaries.

The water supply is adequate for domestic use in all parts of the county. The main streams flow throughout the year. Before 1970, wells were the source of water for the towns of Ashland and Lineville, but in 1970 two structures for retarding floodwater in the Crooked Creek Watershed Project were built to provide municipal water. The total surface area of these two structures is about 135 acres. Wells that range from 30 to 200 feet deep furnish water for homes in rural areas.

The county is well served by roads and railroads. Farms and markets are connected by roads that reach every community in the county. One railroad crosses the central part of the county in an east-west direction, and another crosses the extreme southwest corner of the county.

Four high schools are in the county. Numerous churches are well distributed throughout the southeastern two-thirds of the county.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in Clay County, where they are located, and how they can be used. The soil scientists went into the county knowing they likely would find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes, the size and speed of streams, the kinds of native plants or crops, the kinds of rock, and many facts about the soils. They dug many holes to expose soil profiles. A

profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The soil series and the soil phase are the categories of soil classification most used in a local survey.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Madison and Hiwassee, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

Soils of one series can differ in texture of the surface layer and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Madison loam, 2 to 6 percent slopes, is one of several phases within the Madison series.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series, or of different phases within one series. Two such kinds of mapping units are shown on the soil map of Clay County: soil complexes and soil associations.

A soil complex consists of areas of two or more soils, so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and relative proportions are about the same in all areas. Generally, the name of a soil complex consists of the names of the dominant soils, joined by a hyphen. Chewacla-Riverview complex is an example.

A soil association is made up of adjacent soils that occur as areas large enough to be shown individually on the soil map but are shown as one unit because the time and effort of delineating them separately cannot be justified. There is a considerable degree of uniformity in pattern and relative extent of the dominant soils, but the soils may differ greatly one from another. The name of an association consists of the names of the dominant soils, joined by a hyphen. Madison-Riverview association, hilly, is an example.

While a soil survey is in progress, soil scientists take soil samples needed for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other places are also assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil. Yields under defined management are estimated for all the soils.

Soil scientists observe how soils behave when used as a growing place for native and cultivated plants, and as material for structures, foundations for structures, or covering for structures. They relate this behavior to properties of the soils. For example, they observe that filter fields for onsite disposal of sewage fail on a given kind of soil, and they relate this to the slow permeability of the soil or a high water table. They see that streets, road pavements, and foundations for houses are cracked on a named kind of soil, and they relate this failure to the high shrink-swell potential of the soil material. Thus, they use observation and knowledge of soil properties, together with available research data, to predict limitations or suitability of soils for present and potential uses.

After data have been collected and tested for the key, or benchmark, soils in a survey area, the soil scientists set up trial groups of soils. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others. They then adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under current methods of use and management.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in Clay County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field, or for selecting the exact location of a road, building, or similar structure, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

This soil survey of Clay County joins the published soil surveys of Randolph County, Alabama, published in October 1967, and the recently completed soil survey of

Talladega County, Alabama. Soil associations and delineations on the general soil map for Randolph County do not fully agree with those on the general soil map for Clay County, because the survey in Randolph County was more intensive. In addition, differences in the maps are the result of changes in soil series concepts created by the adoption in 1965 of the current system of soil classification.

The soil associations in this survey have been grouped into two general kinds of landscapes for broad interpretative purposes. Each of the broad groups and the soil associations in each group are described in the following pages.

Soils of the Mountains and Valleys

The soils of the mountains and valleys are shallow to deep, well drained, and steep to undulating. They are highly dissected by a dendritic drainage pattern. These soils are dominantly in the northwestern half of the county. They formed in material weathered from slate, mica schist, and sandstone. Bedrock is at a depth of less than 40 inches throughout most of the area.

This area is used primarily for pine trees but is also used for recreation and has esthetic value. It is suited to the development of sites for hunting, camping, and hiking.

Associations 1, 2, 3, and 4 in Clay County are in the mountains and valleys.

1. Clymer association

Steep, stony soils on mountains; loamy surface layer and subsoil, and hard rock at depths of 24 to 40 inches

The steep, stony soils in this association are on the long, narrow, rugged Talladega and Rebecca Mountains that string in a northeast to southwest direction along the western part of the county. These mountains are among the highest in Alabama. Elevation ranges from about 1,400 to 2,400 feet.

This soil association occupies about 6 percent of the county. Clymer soils make up about 92 percent of the association, and the remaining 8 percent is rock outcrop that is mixed throughout the association.

Clymer soils have a surface layer of cobbly fine sandy loam and a subsoil of sandy clay loam. Cobblestones and stones are common throughout. Hard rock is within a depth of 40 inches. Rock ledges and escarpments are most common on the west side of the mountain.

This association is used mainly for recreation. Trees that have low commercial value for wood products are dominant. These are in stands of low density and vary in size and age. The undergrowth is sparse.

This association is valued mainly for its scenery. It is well suited to recreational uses, such as parks, scenic drives, and hill climbing. The areas also offer opportunity for use as natural environmental areas. The lack of underground water and surface storage sites, steepness of slopes, and stoniness restrict the use of this association for campsites, cabins, homesites, campgrounds, and fishing developments. Hunting is mostly for wild turkeys and squirrels.

Stoniness limits the potential of this association for commercial production of timber and pulpwood. Steep slopes, stoniness, and the shallow root zone prohibit commercial farming.

2. Madison-Tallapoosa-Tusquitee association

Steep soils on mountains and in coves; loamy surface layer, clayey and loamy subsoil, and rock at depths of 10 to 40 inches

This soil association is on steep hillsides and mountains that are mainly in the north-central part of the county. Some smaller areas are in the south-central and southeastern parts of the county. This soil association is highly dissected by a dendritic drainage pattern. It is characterized by short, steep side slopes; narrow, winding ridgetops; narrow, sloping foot slopes; and narrow, nearly level drainageways. The steep side slopes make up about 70 percent of the association. They have slopes that range from 15 to 40 percent, and the steeper slopes generally are on the northwest side. The ridgetops have dominant slopes of 6 to 15 percent and make up about 20 percent of the association. The foot slopes and drainageways make up about 10 percent. Elevation ranges from about 1,000 to 1,300 feet.

This soil association occupies 17 percent of the county. Madison soils make up about 50 percent of the association, Tallapoosa soils about 33 percent, and Tusquitee soils about 8 percent. The remaining 9 percent is minor soils.

Madison soils are steep on the sides of ridges and on ridgetops throughout the association. They have a surface layer of brown gravelly sandy loam and a subsoil of red clay. Weathered mica schist is below a depth of 20 inches.

Tallapoosa soils are mainly steep. They have a surface layer of brown gravelly loam and a subsoil of yellowish red clay loam. Slate is at a depth of 10 to 20 inches.

Tusquitee soils are mainly on foot slopes. They are steep on the sides of larger drainageways and less sloping along the narrow drainageways. They have a surface layer of very dark grayish-brown loam and a subsoil of dark brown clay loam and brown loam. Rock is at a depth of more than 40 inches.

Among the minor soils are Hiwassee soils on uplands and high terraces, Chewacla soils on flood plains, and some shallow soils.

This association is used for the commercial production of pulpwood and timber and for recreation. Moderately dense stands of loblolly pine, longleaf pine, southern red oak, white oak, yellow-poplar, and sweetgum are dominant. The commercial production of high-quality hardwoods is especially suited to the north or northwest slopes, coves, and drainageways. The understory is moderately dense and consists of sedges, dogwood, berries, briars, and honeysuckle. This association has good potential for the development of large parks, wildlife management areas, scenic drives, and hiking and riding trails. Sites suitable for surface storage of water provide a potential for camp areas, cabins, homesites, and fishing developments. This association is intensively hunted for deer, wild turkeys, and squirrels.

Steep slopes and a somewhat shallow root zone prohibit large-scale commercial farming on the soils of this association. Adapted hay, pasture, or fruit crops, however, grow fairly well on some ridgetops.

All the acreage of this association is in woodland. Ownership is mostly by the U.S. Forest Service, private companies, and absentee individuals.

3. *Tatum-Tallapoosa association*

Steep soils on mountains; loamy surface layer, clayey and loamy subsoil, and rock at depths of 10 to 40 inches

The steep soils in this association are on mountains that are mainly adjacent to Talladega County, known locally as Talladega National Forest. Some smaller areas are in the southwestern and southeastern parts of the county. The association is highly dissected by a dendritic drainage pattern. It is characterized by short, steep side slopes; narrow ridgetops; and nearly level, narrow drainageways. The side slopes range from 15 to 30 percent and make up about 80 percent of the association. The ridgetops have slopes of 6 to 15 percent and make up about 15 percent of the association. The narrow drainageways make up about 5 percent of the association. Elevation ranges from about 1,000 to 1,200 feet.

This soil association occupies about 17 percent of the county. Tatum soils make up about 70 percent of the association, and Tallapoosa soils about 20 percent. The remaining 10 percent is the minor Riverview soils.

Tatum soils are steep on the sides of ridges and on ridgetops throughout the association. They have a surface layer of very dark grayish-brown gravelly loam and a subsoil of red clay. Rock is within a depth of 40 inches.

Tallapoosa soils are mainly steep. They have a surface layer of brown gravelly loam and a subsoil of yellowish-red clay loam 3 to 10 inches thick. Rock is within a depth of 20 inches.

The minor Riverview soils are in narrow drainageways.

This association is used for the commercial production of pulpwood and timber and for recreation. Moderately dense stands of loblolly pine, longleaf pine, southern red oak, yellow-poplar, and sweetgum are dominant. The production of high-quality hardwoods is restricted mainly to the narrow drainageways. The understory is of medium to low density and consists of sedges, dogwood, berries, briars, and honeysuckle. This association has good potential for the development of large parks, wildlife preserves, scenic drives, and hiking and riding trails. Sites suitable for surface storage of water provide a potential for the development of camp areas, cabins, homesites, and fishing developments. This association is intensively hunted for deer, wild turkeys, and squirrels.

Steep slopes and a somewhat shallow root zone restrict commercial farming on soils in this association. Adapted hay, pasture, or fruit crops, however, grow fairly well on some ridgetops.

Most of the acreage of this soil association is in woodland. Ownership is mainly by the U.S. Forest Service, private companies, and absentee individuals.

4. *Allen association*

Undulating to rolling soils on foot slopes; loamy surface layer and subsoil, and rock at depths below 72 inches

The undulating to rolling soils in this association are on foot slopes on the east side of the Talladega and Rebecca Mountains. The ridgetops are wide, and slopes are generally uniform, except for those in narrow areas adjacent to drainageways. Elevation ranges from about 700 to 900 feet.

This soil association occupies about 2 percent of the county. Allen and similar soils that are deep and well drained make up about 95 percent of the association, and the remaining 5 percent is slightly shallower soils and moderately well drained alluvial soils.

Allen soils have a surface layer of dark yellowish-brown fine sandy loam and a subsoil of yellowish-red clay loam. Layers that have a high content of gravel and cobblestones are below a depth of 60 inches. Depth to bedrock is greater than 72 inches.

This association is used mainly for commercial production of pulpwood and timber. Moderately dense stands of loblolly and longleaf pines are dominant.

This association is well suited to most crops commonly grown in the county. Less than 5 percent of the acreage is now used for pasture, hay, or corn. About half the acreage of this association has been cleared and cultivated but is now in loblolly and longleaf pines.

This association is suited to recreational uses, such as paths and trails, picnic areas, camp areas, and golf courses. The abundance of underground water and suitable sites for surface storage of water offer good opportunity for cabins, homesites, and fishing developments. This association is hunted for deer, wild turkeys, and squirrels.

Soils of the Dissected Plateaus and Valleys

The soils of the dissected plateaus and valleys are moderately deep or deep, well drained to somewhat poorly drained, and rolling to nearly level. They are moderately dissected by a dendritic drainage pattern. These soils are dominantly in the southeastern half of the county. They formed in material weathered from slate, mica schist, chloritic schist, hornblende schist, and alluvial materials. Bedrock is chiefly at a depth of 20 to 60 inches.

This area is used mainly for pine trees, but it is also used for recreation. Most of the field and forage crops produced in the county are grown on soils in this area. The area is suitable for some types of farming, and it is suitable for the development of sites for hunting, camping, and other types of recreation.

Associations 5, 6, 7, and 8 in Clay County are in the dissected plateaus and valleys.

5. *Madison-Tatum association*

Soils on rolling plateaus; loamy surface layer, clayey subsoil, and rock at depths of 20 to 40 inches

This soil association consists of undulating to hilly areas on uplands of the Piedmont. The areas are scattered throughout the county and occupy most of the southeastern part. They are moderately dissected by intermittent and permanent streams. This association is characterized by some broad, undulating ridgetops; many narrow, winding, undulating to rolling ridgetops; short, rolling to hilly side slopes; and nearly level drainageways that are less than 200 feet wide. Slopes range from 2 to 15 percent. Elevation ranges from about 700 to 1,300 feet.

This soil association occupies about 46 percent of the county. Madison soils make up about 47 percent of the association, and Tatum soils about 27 percent. The remaining 26 percent is minor soils.

Madison soils are on the tops and sides of ridges. They have a brown gravelly sandy loam surface layer and a red clay subsoil. Weathered mica schist is below a depth of 20 inches.

Tatum soils are on the tops and sides of ridges. They have a very dark grayish-brown to brown gravelly loam surface layer and a red clay subsoil. Slate bedrock is within a depth of 40 inches.

Among the minor soils are the Cecil and Grover soils on rolling uplands and the Chewacla and Riverview soils in narrow drainageways.

About 90 percent of the upland commercial farming of the county is done in this association. It is not suited to large-scale commercial row-crop farming, because of slopes and the irregular size and shape of fields. It is well suited to pasture, hay, and other close-growing crops. The soils in this association are productive and respond well to applications of fertilizer.

About 75 percent of this association is used for the production of commercial timber, mainly pulpwood. If good timber management practices are applied, a moderate to high density of trees that have good commercial value can be grown.

This association is suited to the development of recreational areas and wildlife habitat. The areas offer opportunity for use as paths and trails, parks, camp areas, golf courses, and picnic areas. The moderate supply of underground water and abundant sites for surface storage of water provide a potential for cabins, homesites, and fishing developments. This association is intensively hunted and is well suited to use as preserves or management areas for wildlife. It is well stocked with rabbits, quail, doves, raccoons, squirrels, foxes, turkeys, and deer.

Ownership in this association is mostly by individuals. Some large tracts are owned by the U.S. Forest Service and private companies.

6. *Davidson-Gwinnett association*

Soils on rolling plateaus; clayey surface layer and subsoil, and rock at depths of 24 to 60 inches or more

This soil association consists of undulating to hilly areas on uplands of the Piedmont. The areas are mainly in the central part of the county in the vicinity of Bowden Grove Church. They mainly occupy a high plateau that is dissected by intermittent streams. This association is characterized by broad and undulating ridgetops that have short side slopes that are rolling to hilly. Dominant slopes range from 5 to 25 percent. Elevation ranges from 1,000 to 1,300 feet.

This soil association occupies about 3 percent of the county. Davidson soils make up about 60 percent of the association, and Gwinnett soils about 23 percent. The remaining 17 percent is minor soils.

Davidson soils are on the tops and sides of ridges throughout the association. They have a surface layer of dark reddish-brown clay loam and a subsoil of dark-red clay. Rock is at a depth of more than 72 inches.

Gwinnett soils are mainly on sides of ridges. They have a surface layer of dark reddish-brown clay loam and a subsoil of dark-red clay. Bedrock is within a depth of 40 inches.

Minor soils are on uplands. They are less red and are shallower than Davidson and Gwinnett soils.

This association is used for the production of commercial pulpwood and timber. Trees that have good commercial value are dominant and are in stands of moderate to high density.

Areas of this association that have slopes of less than 10 percent are suited to crops commonly grown in the county. Small areas are now used for pasture, hay, and corn. Most of the acreage of this association has been cleared and cultivated but is now in loblolly and shortleaf pines. The soils in this association are productive and respond well to applications of fertilizer.

This association is suited to recreational uses, such as paths and trails, golf courses, and parks. The lack of underground water and surface storage sites restricts the use of this association for campsites, cabins, and fishing developments. Steepness of slope restricts much of the area for use as picnic areas, playgrounds, and homesites. This association is well stocked with rabbits, quail, squirrels, wild turkeys, and deer. It is well hunted.

Ownership in this association is by private companies and individuals.

7. *Iredell-Mecklenburg association*

Soils in undulating valleys; loamy surface layer, clayey subsoil, and hard rock at depths of 20 to 48 inches

This soil association is in undulating areas that are mainly in the west-central part of the county. Small areas are in the northeastern and extreme southwestern parts of the county. This association is characterized by intermittent drainageways and a few permanent streams. Dominant slopes range from 2 to 7 percent. Elevation ranges from about 800 to 1,000 feet.

This association occupies about 3 percent of the county. Iredell soils make up about 44 percent of the association, and Mecklenburg soils about 33 percent. The remaining 23 percent is minor soils.

Iredell soils have a surface layer of brown gravelly loam and a subsoil of yellowish-brown clay. Hard rock is at a depth of 20 to 40 inches.

Mecklenburg soils have a surface layer of reddish-brown gravelly loam and a subsoil of red clay. Bedrock is at a depth of 24 to 48 inches.

Minor soils are throughout the association but without any regular pattern of occurrence on the landscape. They consist of some soils that are shallower than Iredell and Mecklenburg soils and small narrow areas of alluvial soils.

This soil association is used for the production of commercial timber, mainly pulpwood. Trees that have low commercial value are dominant. These trees are in stands of low density and have moderate to sparse undergrowth.

Less than half the acreage of this association has been cleared and cultivated, and most of these areas are now in loblolly or shortleaf pine. Small areas are used for pasture or corn. This association generally is poorly

suited to cultivated crops because of the shallow root zone and the clayey subsoil. It is generally well suited to permanent sod crops.

This association is suitable for recreational and wildlife uses. The areas have potential for the development of parks, paths and trails, campsites, and picnic areas. The lack of underground water and suitable surface storage sites and depth to rock limit the use for cabins, homesites, and fishing developments. This association is fairly well stocked with quail, rabbits, squirrels, and deer and is moderately hunted.

Ownership in this soil association is by private companies and local individuals.

8. *Riverview-Chewacla association*

Nearly level soils on flood plains or low stream terraces; loamy surface layer and subsoil, and rock at depths below 72 inches

This soil association consists of moderately deep, nearly level soils on narrow to moderately broad flood plains along some streams throughout the county. Areas generally are 200 to 600 feet wide and are well drained to somewhat poorly drained. Occasional to frequent flooding late in winter or early in spring is common if these areas are not protected from flooding.

This association occupies about 6 percent of the county. Riverview soils make up about 32 percent of the association, and Chewacla soils about 28 percent. The remaining 40 percent is minor soils.

Riverview soils are throughout the association but generally are adjacent to streams. They have a surface layer of dark yellowish-brown silt loam and a subsoil of brown loam or silt loam.

Chewacla soils are throughout the association but generally are in depressions or lower areas between the streams and adjacent uplands. They have a surface layer of dark yellowish-brown silt loam and a subsoil of dark-brown silt loam that is mottled with yellow and gray.

Among the minor soils are Abell, Altavista, Roanoke, and Toccoa soils on flood plains and stream terraces.

Most of the acreage of this association has been cleared and is used for pasture, corn, and hay. The soils are well suited to crops commonly grown in the county but need protection from flooding and some drainage. They are productive and respond well to applications of fertilizer. This association has good potential for growing vegetable and truck crops.

This association is well suited to the commercial production of pulpwood and timber. It is especially well suited to the production of high-quality hardwoods that have good commercial value.

This association is well stocked with rabbits, quail, beaver, muskrats, raccoons, and squirrels. Some small areas in the south-central part of the county are suitable for the development of waterfowl. This association is intensively hunted.

This association has suitable sites for developing large recreational lakes. Flooding and a high water table limit such uses as playgrounds, campsites, golf courses, and homesites.

Ownership in this soil association is by individuals.

Descriptions of the Soils

This section describes the soil series and mapping units in Clay County. Each soil series is described in detail, and then, briefly, each mapping unit in that series. Unless it is specifically mentioned otherwise, it is to be assumed that what is stated about the soil series holds true for the mapping units in that series. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the mapping unit and the description of the soil series to which it belongs.

An important part of the description of each soil series is the soil profile, that is, the sequence of layers from the surface downward to rock or other underlying material. Each series contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second is much more detailed and is for those who need to make thorough and precise studies of soils. The profile described in the series is representative for mapping units in that series. If the profile of a given mapping unit is different from the one described for the series, these differences are stated in describing the mapping unit, or the differences are apparent in the name of the mapping unit. The color terms are for a moist soil unless otherwise stated.

Following the name of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map. Listed at the end of each description of a mapping unit is the capability unit and woodland suitability group in which the mapping unit has been placed. This information is also given in the "Guide to Mapping Units" at the back of the survey. An explanation of capability units and a discussion of woodland suitability groups can be found in the section "Use and Management of the Soils."

The acreage and proportionate extent of each mapping unit are shown in table 1. Many of the terms used in describing soils can be found in the Glossary, and more detailed information about the terminology and methods of soil mapping can be obtained from the "Soil Survey Manual" (*7*).[1]

This soil survey of Clay County joins the published soil surveys of Randolph County, Alabama, published in October 1967, and the recently completed soil survey of Talladega County, Alabama. Descriptions, names, and delineations of soils in this soil survey do not fully agree with soil maps in Randolph County, because the survey in Randolph County was more intensive. Also, differences are the result of modifications in series concepts created by the adoption in 1965 of the current system of soil classification.

Abell Series

The Abell series consists of deep, well-drained, medium-textured soils on stream terraces. These soils formed in materials washed from uplands surrounding the larger streams of the county. Some areas are subject to periodic flooding. Slopes range from 0 to 3 percent.

In a representative profile the surface layer is brown loam about 8 inches thick. It overlies 7 inches of dark

[1] Italic numbers in parentheses refer to Literature Cited, p. 45.

TABLE 1.—*Approximate acreage and proportionate extent of the soils*

Mapping unit	Acres	Percent
Abell loam	710	0.2
Allen association, rolling [1]	7,085	1.8
Altavista complex	3,420	.9
Cecil association, rolling [1]	4,675	1.2
Chewacla-Riverview complex	11,870	3.1
Clymer association, steep [1]	22,950	5.9
Davidson-Gwinnett association, hilly [1]	12,555	3.3
Grover sandy loam, 2 to 6 percent slopes	665	.2
Grover sandy loam, 6 to 10 percent slopes	1,640	.4
Grover association, rolling [1]	10,290	2.7
Hiwassee clay, 6 to 10 percent slopes	1,430	.4
Iredell-Mecklenburg association, undulating [1]	12,915	3.3
Madison loam, 2 to 6 percent slopes	845	.2
Madison gravelly sandy loam, 6 to 10 percent slopes	14,355	3.7
Madison-Riverview association, hilly [1]	80,065	20.8
Madison-Tallapoosa-Tusquitee association, steep [1]	66,910	17.4
Riverview silt loam	2,830	.7
Roanoke silt loam	1,700	.4
Tatum-Chewacla association, hilly [1]	63,740	16.5
Tatum-Tallapoosa-Riverview association, steep [1]	64,425	16.7
Toccoa sandy loam	845	.2
Total	385,920	100.0

[1] The delineations generally are much larger and the composition of these units is more variable than other mapping units in the county. Mapping has been controlled well enough, however, that reliable interpretations can be made for the expected uses.

yellowish-brown silt loam and 13 inches of yellowish-brown loam. The next layer is 18 inches of yellowish-brown clay loam that has a few red mottles. Below this is sandy loam.

Runoff is medium, and permeability is moderate. The available water capacity is medium.

Abell soils are well suited to crops commonly grown in the county. They are fairly easy to work and can be worked throughout a moderate range of moisture content. Response to lime and fertilizer is very good. Some crops are damaged by occasional flooding.

The native vegetation is a high dense stand of mixed hardwoods and some pines. All the acreage of these soils has been cultivated, and nearly all of it is now used for pasture or corn. Small areas are in loblolly pine.

Representative profile of Abell loam in a pasture where the slope is 1 percent, about 0.6 mile northwest of Marvin Chapel Church, SW¼NW¼ sec. 16, T. 21 S., R. 6 E.:

Ap—0 to 8 inches, brown (10YR 4/3) loam; weak, medium, granular structure; friable; common fine roots; few worm casts; strongly acid; clear; wavy boundary.

B1—8 to 15 inches, dark yellowish-brown (10YR 4/4) silt loam; weak, medium, granular structure; friable; common fine roots; strongly acid; gradual, smooth boundary.

B21t—15 to 28 inches, yellowish-brown (10YR 5/6) loam; weak, fine and medium, subangular blocky structure; friable; very thin patchy clay films on faces of peds; sand bridged and coated with clay; few fine roots; strongly acid; gradual, smooth boundary.

B22t—28 to 46 inches, yellowish-brown (10YR 5/6 and 5/4) clay loam; few, medium, prominent mottles of red (2.5YR 4/6); weak, fine and medium, subangular blocky structure; friable; thin patchy clay film on faces of peds; very strongly acid; gradual, smooth boundary.

C—46 to 50 inches, dark grayish-brown (2.5Y 4/2) sandy loam; single grain; loose; many fine mica flakes; very strongly acid.

The solum ranges from 42 to 60 inches in thickness. Mica flakes throughout the profile range from very few to common. The A horizon ranges from 6 to 10 inches in thickness. It is brown or dark yellowish brown. The content of fragments in the A horizon ranges from 0 to 10 percent. The B1 horizon ranges from 7 to 12 inches in thickness and from dark yellowish brown to brown or dark brown in color. The B2t horizon ranges from 15 to 38 inches in thickness. The texture is clay loam, loam, or silt loam, and the color is dark yellowish brown, brown, yellowish brown, or strong brown. In many places at depths greater than 30 inches, there are mottles of yellow, red, or gray. The C horizon is sandy loam and, in some places, contains varying quantities of gravel. Reaction of the A and B1 horizons is strongly acid, and that of the B2t horizon is strongly acid or very strongly acid.

Abell soils are adjacent to Altavista, Chewacla, Riverview, Roanoke, and Toccoa soils. They are better drained than Altavista, Chewacla, and Roanoke soils, and they have a better developed profile than Chewacla, Riverview, and Toccoa soils. Abell soils are finer textured than Toccoa soils.

Abell loam (Ab).—This is the only Abell soil mapped in the county. Slopes range from 0 to 3 percent.

Included with this soil in mapping are areas where the surface layer is silt loam and some small areas that have a yellowish-red or red subsoil. Also included are other small areas that are gravelly and some profiles that have layers of gravel at depths of 20 to 42 inches. Small areas of Altavista, Chewacla, and Riverview soils also are included.

This soil is well suited to crops commonly grown in the county, but some crops are occasionally damaged by flooding. Response to lime and fertilizer is very good.

Cultivated crops can be grown year after year. Crop residue should be returned to the soil. Cover crops are needed if low-residue row crops are grown. This soil is well suited to irrigation.

This soil is suited to both needleleaf and broadleaf trees. Species suitable for planting are black walnut, loblolly pine, slash pine, yellow-poplar, sweetgum, sycamore, and cottonwood. This soil has no limitations that affect management.

Summer annual crops that provide food for wildlife can be grown in abundance on this soil. Capability unit I–31; woodland suitability group 3o7.

Allen Series

The Allen series consists of deep, well-drained, moderately coarse textured and medium-textured soils on foot slopes. These soils formed in colluvium at the base of the Talladega and Rebecca Mountains. Slopes range from 2 to 15 percent.

In a representative profile (fig. 2) the surface layer is dark yellowish-brown fine sandy loam about 8 inches thick. It overlies 52 inches of yellowish-red clay loam and 23 inches of mottled gravelly clay loam. The next layer is 70 percent gravel and cobblestones and some clay loam.

Runoff is medium, and permeability is moderate. The available water capacity is high.

Allen soils are well suited to crops commonly grown in the county. They are fairly easy to work and can be worked throughout a wide range of moisture content.

Figure 2.—**Profile of Allen fine sandy loam in an area of Allen association, rolling. This soil has gravel and cobblestones in the lower part of the profile.**

Response to lime and fertilizer is good. The hazard of erosion is severe.

The native vegetation is a moderately dense stand of mixed hardwoods and pines. About half the acreage of these soils has been cultivated, but it is now in loblolly and longleaf pines. A few small areas are used for pasture, hay, or corn.

Representative profile of Allen fine sandy loam in an area of Allen association, rolling, in an idle area where the slope is 4 percent, about 700 feet south of bridge crossing Hatchet Creek on State Route No. 148, NW¼ NW¼ sec. 20, T. 21 S., R. 6 E.:

A—0 to 8 inches, dark yellowish-brown (10YR 4/4) fine sandy loam; moderate, medium, granular structure; very friable; 10 percent fragments; common fine and few medium roots; strongly acid; clear, wavy boundary.

B21t—8 to 24 inches, yellowish-red (5YR 5/6) clay loam; moderate, fine and medium, subangular blocky structure; friable; common fine and medium roots; common krotovina; thin clay films on faces of peds; strongly acid; clear, wavy or irregular boundary.

B22t—24 to 60 inches, yellowish-red (5YR 4/6) clay loam; common, medium, prominent mottles of yellowish brown; strong, fine and medium, subangular blocky structure; firm; slightly brittle; moderately thick, continuous clay films on faces of peds; very strongly acid; gradual, irregular boundary.

B3—60 to 83 inches, mottled (5YR 4/6) and yellowish-brown (10YR 5/6) gravelly clay loam; weak, medium, subangular blocky structure; friable; 50 percent fragments less than 10 inches across, slightly cemented; very strongly acid; gradual, irregular boundary.

C—83 inches, sandstone and quartz fragments and strong brown (7.5YR 5/6) clay loam matrix; 70 percent fragments.

The solum ranges from 60 to 90 inches in thickness. The A horizon ranges from 4 to 8 inches in thickness. It is fine sandy loam, loam, or silt loam. The A horizon ranges from very dark grayish brown to dark yellowish brown. The content of angular fragments in the A horizon is less than 12 percent. The B2t horizon is clay loam or sandy clay loam. It ranges from yellowish red to red. In many profiles, at a depth of 40 to 60 inches, common to many pebbles or cobblestones occupy up to 30 percent of the mass, by volume. Reaction is strongly acid or very strongly acid throughout.

Allen soils are adjacent to Clymer, Tallapoosa, and Tatum soils. They are deeper than all these adjacent soils. Allen soils are not so clayey in the subsoil as Tatum soils, and they are redder than Clymer soils. They have a lower content of fragments than the Clymer soils.

Allen association, rolling (AlC).—The Allen soils in this mapping unit are the only Allen soils mapped in the county. Slopes range from 2 to 15 percent.

Allen soils and soils that are similar to Allen soils but are less red in the subsoil make up 95 percent of the unit. Shallow soils make up the remaining 5 percent.

The delineations generally are much larger and the composition of these units is more variable than other mapping units in the county. Mapping has been controlled well enough, however, for the expected uses of the soils.

Included with this unit in mapping are some soils that are yellower and some soils that are slightly shallower. Also included are some areas of soils that are gravelly and some that are cobbly.

A good cropping system keeps close-growing crops on these soils 60 to 75 percent of the time. Terraces or contour stripcropping, contour farming, grassed waterways, and management of crop residue are needed to control erosion if these soils are used for cultivated crops. These soils are well suited to irrigation.

These soils are suited to both broadleaf and needleleaf trees. Species suitable for planting are loblolly pine, slash pine, Virginia pine, and yellow-poplar. Pines are among the better suited species. The soils in this unit have few if any limitations that affect management.

These soils can produce abundant food and cover for most wildlife, especially deer and wild turkey. Capability unit IIIe–31; woodland suitability group 3o7.

Altavista Series

The Altavista series consists of deep, moderately well drained, medium-textured soils on stream terraces. These soils formed in materials washed from surrounding uplands. They are subject to occasional or frequent flooding

of short duration, mainly late in winter or early in spring. Slopes range from 0 to 3 percent.

In a representative profile the surface layer is dark grayish-brown loam about 6 inches thick. Next is 15 inches of brownish-yellow sandy clay loam. Below this is 32 inches of mottled brown and gray clay loam. The underlying material is mottled brown and gray sandy loam or sandy clay loam.

Runoff is slow, and permeability is moderate. The available water capacity is medium.

Altavista soils are well suited to corn and to pasture and hay crops commonly grown in the county. They are easy to work and can be worked throughout a moderately wide range of moisture content. Response to fertilizer is good.

The native vegetation is a moderately to highly dense stand of mixed hardwoods and some pines. Most of the acreage of these soils has been cultivated, but some areas are now in mixed stands of hardwoods and pines. Many areas are used for pasture, hay, or corn.

Representative profile of Altavista loam in an area of Altavista complex in a wooded area (old field), about 2 miles southwest of Horn Valley Church, SW¼SW¼ sec. 19, T. 20 S., R. 6 E.:

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) loam; weak, fine, granular structure; very friable; common fine and medium roots; strongly acid; abrupt, smooth boundary.

B21t—6 to 21 inches, brownish-yellow (10YR 6/6) sandy clay loam; weak, fine, subangular blocky structure; friable; few fine and medium roots; very thin, patchy clay films on faces of peds; strongly acid; clear, smooth boundary.

B22t—21 to 53 inches, mottled strong-brown (7.5YR 5/6), light yellowish-brown (10YR 6/4), and light brownish-gray (10YR 6/2) clay loam; weak, medium, subangular blocky structure; friable; very thin, patchy clay films on faces of peds; strongly acid; gradual, smooth boundary.

C—53 to 60 inches, mottled strong-brown (7.5YR 5/6) and light brownish-gray (10YR 6/2) sandy loam to sandy clay loam; massive; friable; some lenses of sandy loam; few ¼-inch to 1-inch fragments.

The solum ranges from 30 to 60 inches in thickness. The A horizon ranges from 4 to 10 inches in thickness. It is dark grayish brown, brown, grayish brown, or yellowish brown. The B2t horizon is loam, sandy clay loam, or clay loam and is brownish yellow, yellowish brown, strong brown, or reddish yellow. At depths of 15 to 30 inches, there are mottles of gray, brown, and yellow. The C horizon is structureless (massive) and ranges from sandy loam to clay. Few to common mica flakes are throughout the profile. Angular fragments in the profile seldom are more than 5 percent, by volume. Reaction is medium acid or strongly acid in the A horizon and strongly acid in the B2t and C horizons.

Altavista soils are adjacent to Abell, Chewacla, Riverview, Roanoke, and Toccoa soils. They are not so well drained as Abell soils. Altavista soils have a better developed profile than Chewacla, Riverview, or Toccoa soils, but they are not so well drained as Riverview or Toccoa soils. Altavista soils are better drained than Roanoke soils.

Altavista complex (At).—The Altavista soils in this complex are the only Altavista soils mapped in the county. Slopes range from 0 to 3 percent.

Altavista soils make up about 32 percent of the mapping unit. Included in mapping are soils that are similar in texture throughout the profile but have variable drainage that occurs in intricate patterns. Also included are some soils that have a thicker and darker colored surface layer.

Soils in this complex are suited to corn and to all pasture and hay crops commonly grown in the county. Response to lime and fertilizer is good.

Row crops can be grown year after year. Crop residue needs to be returned to the soil. Cover crops are needed if low-residue row crops are grown. Low, wet areas need drainage to remove excess water. These soils are well suited to irrigation.

These soils are suited to both needleleaf and broadleaf trees. Species suitable for planting are black walnut, loblolly pine, slash pine, yellow-poplar, sweetgum, sycamore, and cottonwood. The only soil limitation that affects management is a moderate restriction on the use of equipment.

These soils are well suited to use as wildlife habitat. Fence rows, field borders, and ditchbanks are good sites for plantings that attract quail and other small game. Capability unit IIw–31; woodland suitability group 2w8.

Cecil Series

The Cecil series consists of deep, well-drained, moderately coarse textured soils on uplands of the Piedmont. These soils formed in material weathered from granite or schist. Slopes range from 4 to 10 percent.

In a representative profile the surface layer is dark-brown or brown gravelly sandy loam about 7 inches thick. Below this is 49 inches of yellowish-red clay loam and red clay. The underlying material is highly weathered granite or schist.

Runoff is medium, and permeability is moderate. The available water capacity is medium.

Cecil soils are well suited to crops commonly grown in the county. They are fairly easy to work and can be worked throughout a moderate range of moisture content. Response to lime and fertilizer is good. The hazard of erosion is severe.

The native vegetation is a moderately dense stand of mixed pines (fig. 3) and hardwoods. Most of the acreage of these soils has been cultivated, but it is now in good stands of loblolly and longleaf pines. Some small areas are used for pasture or hay.

Representative profile of Cecil sandy loam in an area of Cecil association, rolling, in a wooded area (old field) where the slope is 8 percent, about 1.25 miles south-southeast of Guthries Chapel, NE¼NE¼ sec. 15, T. 22 S., R. 7 E.:

A&O—0 to 2 inches, dark-brown (10YR 4/3) mixed sandy loam and undecomposed organic matter; single grain; very friable; many fine roots; slightly acid; abrupt, smooth boundary.

A—2 to 7 inches, brown (7.5YR 4/4) gravelly sandy loam; moderate, medium and coarse, granular structure; friable; common, fine, medium and large roots; 5 percent schist fragments, less than 1 inch long; 15 percent quartz pebbles; slightly acid; abrupt, wavy boundary.

B1—7 to 10 inches, yellowish-red (5YR 4/6) clay loam; weak, fine and medium, subangular blocky structure; friable; few fine and medium roots; 10 percent schist fragments less than 1 inch long; few fine mica flakes; thin patchy clay films on faces of peds; medium acid; clear, smooth boundary.

B2t—10 to 32 inches, red (2.5YR 4/6) clay; moderate, medium and fine, subangular blocky structure; friable; few fine and medium roots; thin, nearly continuous clay films on faces of peds; 10 percent schist fragments less than 1 inch long; common fine and medium and few large mica flakes; strongly acid; gradual, smooth boundary.

Figure 3.—Stand of natural pine forest on Cecil association, rolling.

B3—32 to 56 inches, red (2.5YR 4/8) clay loam; weak, coarse and medium, subangular blocky structure; friable; patchy clay films on faces of peds and schist fragments; 10 percent schist fragments less than 1 inch long; few small lenses of highly weathered parent material; common fine mica flakes; strongly acid; gradual, irregular boundary.

C—56 to 74 inches, highly weathered granite and schist.

The solum ranges from about 36 to 60 inches in thickness. The A horizon is loam or sandy loam 3 to 10 inches thick. The content of quartz pebbles in the A horizon ranges from 0 to 20 percent. The A horizon is dark brown, brown, yellowish brown, or reddish brown. The B1 horizon is clay loam or loam. The B2 horizon is about 30 inches thick and is red clay or clay loam. The B3 horizon is at depths of more than 30 to 40 inches and is red clay loam, loam, or sandy clay loam. The B3 horizon ranges from about 17 to 26 inches in thickness. The C horizon is highly weathered granite or schist that is sandy loam or loam in texture. The content of mica in the A and B2t horizons ranges from none to common and in the B3 and C horizons from common to many. Depth to bedrock is more than 6 feet. The A and B1 horizons are slightly acid or medium acid, and the Bt and C horizons are strongly acid.

Cecil soils are adjacent to Grover, Madison, and Tatum soils. They are redder and more clayey than Grover soils. Cecil soils are deeper to bedrock than Madison and Tatum soils.

Cecil association, rolling (CeC).—The Cecil soils in this association are the only Cecil soils mapped in the county. Slopes range from 4 to 10 percent.

Cecil soils make up about 77 percent of the mapping unit, and soils that are similar in behavior and need similar management make up the rest. Included in mapping are some areas of shallower soils. Also included are small areas that have shallow rills, gullies, or severe sheet erosion. Small areas of soils that are cobbly also are included.

The delineations generally are much larger and the composition of these units is more variable than other mapping units in the county. Mapping has been controlled well enough, however, for the expected uses of the soils.

These soils are well suited to crops commonly grown in the county. Response to lime and fertilizer is good.

A good cropping system keeps perennial sod crops on these soils three-fourths of the time. An adequate rotation is 3 years of sod crops and 1 year of row crops. Terraces or contour stripcropping, contour farming, grassed waterways, and management of crop residue are needed to control erosion if these soils are used for cultivated row crops. These soils are well suited to irrigation.

These soils are suited to both broadleaf and needleleaf trees. Species suitable for planting are loblolly pine, slash pine, Virginia pine, and yellow-poplar. Pines are among the better species. These soils have few if any limitations that affect management.

Food and cover for wildlife can be produced in abundance on these soils. Capability unit IIIe–31; woodland suitability group 3o7.

Chewacla Series

The Chewacla series consists of somewhat poorly drained, medium-textured soils on flood plains or low stream terraces. These soils formed in materials washed from surrounding uplands. They are subject to occasional or frequent flooding of short duration, mainly late in winter or early in spring. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is dark yellowish-brown silt loam that is about 6 inches thick and overlies 9 inches of dark-brown silt loam. Below this is 20 inches of mottled brown and gray silt loam. The next layer is 16 inches of dark-gray silt loam, a buried surface soil, that overlies 21 inches or more of dark-gray silt loam, a buried subsoil.

Runoff is slow, and permeability is moderate. A seasonal high water table is at a depth of about 18 inches. The available water capacity is medium to high.

Chewacla soils are suited to corn and to most pasture and hay crops commonly grown in the county. They are easy to work and can be worked throughout a wide range of moisture content. Response to lime and fertilizer is good.

The native vegetation is a highly dense stand of mixed hardwoods and some pines. About half the acreage of these soils is now used for pasture, corn, or hay.

The Chewacla soils in this county are mapped only in a complex with Riverview soils.

Representative profile of Chewacla silt loam in an area of Chewacla-Riverview complex, in a pasture about 1.75 miles north of Lineville, NW¼NW¼ sec. 31, T. 19 S., R. 9 E.:

Ap—0 to 6 inches, dark yellowish-brown (10YR 4/4) silt loam; weak, fine, granular structure; friable; few fine roots; medium acid; abrupt, smooth boundary.

B21—6 to 15 inches, dark-brown (7.5YR 4/4) silt loam; weak, fine, subangular blocky structure; friable; strongly acid; clear, smooth boundary.

B22—15 to 35 inches, mottled dark yellowish-brown (10YR 4/4), dark-brown (7.5YR 4/4), and grayish-brown (10YR 5/2) silt loam; weak, fine, subangular blocky structure; friable; strongly acid; gradual, wavy boundary.

Abg—35 to 51 inches, dark-gray (10YR 4/1) silt loam; massive; friable; strongly acid; gradual, wavy boundary.

Bbg—51 to 72 inches, dark-gray (N 4/0) silt loam; massive; friable.

The A horizon is 6 to 9 inches thick. It is dark yellowish brown or dark brown. The B horizon generally is silt loam, but it ranges from silt loam to loam, clay loam, or sandy loam. It ranges from dark brown to brownish yellow. At depths of more than 15 to 20 inches, there are mottles of gray, yellow, and brown. In many places buried A and B horizons are at depths greater than 30 inches. These horizons are silt loam, loam, or clay loam. In places strata of gravel are in the lower horizons. Reaction is medium acid to strongly acid throughout.

Chewacla soils are adjacent to Abell, Altavista, Riverview, Roanoke, and Toccoa soils. They are not so well drained as Abell, Altavista, Riverview, and Toccoa soils. Chewacla soils are not so coarse textured as Toccoa soils. They do not have as well developed profiles as Abell, Altavista, and Roanoke soils. Chewacla soils are better drained than Roanoke soils.

Chewacla-Riverview complex (Ch).—The Chewacla soils in this complex are the only Chewacla soils mapped in this county. The Riverview soils are described under the Riverview series. Slopes range from 0 to 2 percent.

Chewacla soils make up about 50 percent of the complex, and Riverview soils about 27 percent. The remaining 23 percent is made up of included Abell, Altavista, Roanoke, and Toccoa soils.

These soils are suited to tall fescue and bahiagrass. They are suited to most crops commonly grown in the county if the low, wet areas are drained. Response to lime and fertilizer is good.

If good drainage systems are installed, cultivated crops can be grown year after year. Crop residue needs to be returned to the soil if row crops are grown. These soils are suited to irrigation.

These soils are suited to both broadleaf and needleleaf trees. Species suitable for planting are loblolly pine, slash pine, cottonwood, sweetgum, sycamore, and yellow-poplar. The native vegetation is mainly hardwoods. Seasonal wetness is a moderate limitation to the use of equipment and causes moderate seedling mortality.

Food and cover for wildlife can be produced in abundance on these soils, but only a small acreage is used for wildlife plantings. Capability unit IIIw–32; woodland suitability group 1w8.

Clymer Series

The Clymer series consists of moderately deep, well-drained, moderately coarse textured, stony soils on uplands. These soils formed in residuum derived from sandstone on the Talladega and Rebecca Mountains. Slopes range from 20 to 60 percent.

In a representative profile (fig. 4) the surface layer is dark grayish-brown cobbly fine sandy loam about 5 inches thick. It overlies 23 inches of yellowish-brown sandy clay loam. Sandstone bedrock is at a depth of 28 inches.

Runoff is medium, and permeability is moderately rapid. The available water capacity is low.

Clymer soils generally are not suited to row crops, because of steep slopes and rock fragments on and throughout the soil.

The native vegetation is a low-density stand of mixed hardwoods that have low commercial value and some pines. Stoniness limits the potential for commercial production of timber. These soils are used mainly for recreation.

Representative profile of Clymer cobbly fine sandy loam in an area of Clymer association, steep, in a wooded area where the slope is 21 percent, about 14 miles west of Ashland, SW¼NW¼ sec. 24, T. 20 S., R. 5 E.:

A—0 to 5 inches, dark grayish-brown (10YR 4/2) cobbly fine sandy loam; weak, fine, granular structure; very friable; common fine and medium roots; 25 to 35 percent angular fragments up to 5 feet in diameter; strongly acid; clear, wavy boundary.

Figure 4.—Profile of Clymer cobbly fine sandy loam in an area of Clymer association, steep. This soil is about 28 inches deep to sandstone bedrock.

B21t—5 to 11 inches, light yellowish-brown (10YR 6/4) sandy clay loam; weak, fine, subangular blocky structure; friable; common fine and medium roots; sand grains bridged and coated with clay; very strongly acid; gradual, wavy boundary.

B22t—11 to 28 inches, yellowish-brown (10YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; friable, few fine roots; very thin, patchy clay films in large pores, sand grains bridged and coated with clay; very strongly acid; clear, wavy boundary.

R—28 inches, sandstone bedrock.

The solum ranges from 24 to 40 inches in thickness. The A horizon is dominantly 3 to 8 inches thick. The content of cobblestones and gravel ranges from 15 to 35 percent in all horizons of the solum. Stones of sandstone, 10 inches to 10 feet in diameter, are on the surface and throughout the profile in 3 to 50 percent of the area. The A horizon is very dark brown, brown, grayish brown, or yellowish brown. The B horizon is about 27 inches thick and is sandy clay loam or loam. This horizon is light yellowish brown, yellowish brown, brownish yellow, reddish yellow, or strong brown. In places a C horizon of sandy loam to loamy sand is present. Bedrock is at a depth of less than 40 inches. Reaction is strongly acid or very strongly acid throughout.

Clymer soils are adjacent to Allen and Tatum soils. They are not so red and clayey in the subsoil as Tatum soils and are not so red or so deep as Allen soils. Clymer soils have more rock fragments than Allen or Tatum soils.

Clymer association, steep (CIE).—The Clymer soils in this association are the only Clymer soils mapped in this county. Dominant slopes range from 20 to 60 percent.

Clymer soils make up about 92 percent of the mapping unit. Soils that are similar in behavior and need similar management make up the rest.

The delineations generally are much larger and the composition of these units is more variable than other mapping units in the county. Mapping has been controlled well enough, however, for the expected uses of the soils.

Included in mapping are some areas of shallower soils and rock outcrops.

The soils in this association are suited to both needleleaf and broadleaf trees, but the needleleaf species are the better producers and should be favored under most conditions. Species suitable for planting are loblolly pine, Virginia pine, longleaf pine, and redcedar. Yellow-poplar plantings grow well in the better, more moist areas. These soils are steep (fig. 5). Soil limitations that affect management are moderate hazards of erosion and seedling mortality and a moderate restriction on use of equipment.

These soils are poorly suited to planted crops that provide food and cover for wildlife, but woodland, the dominant use, provides food and cover for deer, wild turkeys, squirrels, and other woodland wildlife. Capability unit VIIe–32; woodland suitability group 4x8.

Davidson Series

The Davidson series consists of deep, well-drained, medium-textured to fine-textured soils on uplands of the Piedmont. These soils formed in residuum weathered from hornblende gneiss. Elevation ranges from 1,000 to 1,300 feet. Dominant slopes range from 5 to 20 percent.

In a representative profile (fig. 6) the surface layer is dark reddish-brown clay loam about 6 inches thick. It overlies 66 inches of dark-red clay.

Runoff is medium, and permeability is moderate. The available water capacity is medium.

Davidson soils are well suited to crops commonly grown in the county. They are fairly easy to work and can be worked throughout a moderate range of moisture content. Response to lime and fertilizer is very good. The hazard of erosion is severe.

The native vegetation is a moderately dense stand of mixed hardwoods and pines. Most of the acreage of these soils has been cultivated, but it is now in loblolly pine. Some areas are used for pasture, hay, or corn.

The Davidson soils in this county are mapped only with Gwinnett soils.

Representative profile of Davidson clay loam in an area of Davidson-Gwinnett association, hilly, in a wooded area where the slope is 7 percent, about 0.75 mile

Figure 5.—An area of Clymer association, steep. These soils have many cobblestones on the surface. The trees are low-quality hardwoods.

southeast of Pleasant Grove Church, NE¼SE¼ sec. 3, T. 20 S., R. 7 E.:

A—0 to 6 inches, dark reddish-brown (2.5YR 2/4) clay loam and dark reddish-brown (2.5YR 3/3) clay; moderate, medium, granular structure; friable; many fine and medium roots, few large roots; strongly acid; clear, smooth boundary.

B2t—6 to 72 inches, dark-red (2.5YR 3/6) clay, moist and dry; moderate, fine and medium, subangular blocky structure; friable; common fine and medium roots to a a depth of 24 inches, few below; few concretions of manganese 2 to 5 millimeters across; thin clay films on faces of peds; medium acid.

The A horizon ranges from 5 to 8 inches in thickness. It ranges from loam to clay and from dark reddish brown to dusky red. The B horizon is more than 60 inches thick and is clay. This horizon is dark red, dusky red, or dark reddish brown. Mica flakes or angular fragments in the B horizon generally are less than 5 percent. Depth to bedrock ranges from 72 to 120 inches. The A horizon is strongly acid or medium acid, and the B horizon is medium acid or slightly acid.

Davidson soils are adjacent to Gwinnett, Hiwassee, Madison, and Tatum soils. They are deeper than all of these adjacent soils and are redder throughout than Madison and Tatum soils.

Davidson-Gwinnett association, hilly (DgD).—This is the only unit of Davidson and Gwinnett soils mapped in the county. Dominant slopes range from 5 to 25 percent.

Davidson soils make up about 60 percent of the association, and Gwinnett soils about 23 percent. Soils that are similar in behavior and need similar management make up the rest.

The delineations generally are much larger and the composition of these units is more variable than other mapping units in the county. Mapping has been controlled well enough, however, for the expected uses of the soils.

Included with this unit in mapping are some areas of soils that are not so red, soils that are shallower, and soils that contain more than 10 percent weatherable minerals. Also included are areas where the surface layer is up to 10 percent angular fragments.

In areas where slope is less than 10 percent, the soils of this association are suited to crops commonly grown in the county. Response to lime and fertilizer is good.

A good cropping system keeps perennial sod (fig. 7) on these soils 60 to 75 percent of the time. Terraces or contour stripcropping, contour farming, grassed waterways, and management of crop residue are needed to control erosion if these soils are used for cultivated row crops. These soils are suited to irrigation.

Soils of this association are suited to both broadleaf and needleleaf trees. Species suitable for planting are loblolly pine, slash pine, Virginia pine, and yellow-poplar. Pines are among the better suited species to grow. The soils have few if any limitations that affect management.

Figure 6.—Profile of Davidson clay loam in an area of Davidson-Gwinett association, hilly. This is a deep, well-drained soil.

These soils can produce an abundance of food and cover for wildlife, especially for deer, quail, wild turkeys, squirrels, and other woodland wildlife. Capability unit IVe–31; woodland suitability group 3o7.

Grover Series

The Grover series consists of deep, well-drained, moderately coarse textured soils on uplands of the Piedmont. These soils formed in residuum weathered from granite. Elevation ranges from about 700 to 900 feet. Dominant slopes range from 2 to 15 percent.

In a representative profile (fig. 8) the surface layer is dark grayish-brown sandy loam about 7 inches thick. It overlies 3 inches of yellowish-brown sandy loam. The next layer is 18 inches of strong-brown clay loam that overlies 11 inches of yellowish-red loam. Below this is 30 or more inches of mottled sandy clay loam or sandy loam.

Runoff is medium to rapid, and permeability is moderate. The available water capacity is medium.

Grover soils are suited to crops commonly grown in the county. They are easy to work and can be worked throughout a wide range of moisture content. Response to lime and fertilizer is good. The hazard of erosion is moderate to very severe.

The native vegetation is a moderately dense stand of mixed hardwoods and pines. Most of the acreage of these soils has been cultivated, but it is now in loblolly pine. Some small areas are used for pasture, hay, or corn.

Representative profile of Grover sandy loam in an area of Grover association, rolling, in a wooded area where the slope is 12 percent, about 0.75 mile north of Mt. Moriah Church, NE¼NE¼ sec. 29, T. 21 S., R. 8 E.:

A—0 to 7 inches, dark grayish-brown (10YR 4/2) sandy loam; weak, fine, granular structure; very friable; many fine and medium roots, common large roots; medium acid; abrupt, smooth boundary.

B1—7 to 10 inches, yellowish-brown (10YR 5/4) sandy loam; weak, fine and medium, subangular blocky structure; friable; common fine roots, few medium and large roots; sand grains bridged and coated; material from A horizon in root channels; strongly acid; clear, wavy boundary.

B2t—10 to 28 inches, strong-brown (7.5YR 5/6) clay loam; moderate, fine and medium, subangular blocky structure; friable; common fine roots, few medium and large roots; few fine mica flakes; few partly weathered granite fragments less than 6 inches long; nearly continuous clay films on faces of peds; very strongly acid; gradual, wavy boundary.

B3—28 to 39 inches, yellowish-red (5YR 5/6) loam; common, medium, distinct mottles of strong brown and light yellowish brown; weak, medium and coarse, subangular blocky structure; friable; few fine and medium roots; few fine mica flakes; patchy clay films on faces of peds; very strongly acid; gradual, wavy boundary.

C1—39 to 60 inches, mottled yellowish-red (5YR 5/6), strong-brown (7.5YR 5/6), and light yellowish-brown (10YR 6/4) sandy clay loam; massive; friable; few fine and medium roots; common fine and medium mica flakes; few highly weathered granite fragments; very strongly acid; clear, irregular boundary.

C2—60 to 110 inches, mottled brown (7.5YR 5/4) and yellowish-brown (10YR 5/4) sandy loam; massive; very friable; many fine mica flakes; some yellow and yellowish-red colors at a depth of 80 to 90 inches.

The solum ranges from 24 to 48 inches in thickness. The A horizon is dominantly 4 to 10 inches thick. It is dark grayish brown, yellowish brown, brown, or light olive brown and is sandy loam or fine sandy loam. The content of angular fragments on and throughout the A horizon ranges from none to 20 percent. The B horizon is yellowish brown, dark yellowish brown, strong brown, or yellowish red. The B1 horizon ranges from sandy loam to sandy clay loam. The B2t horizon ranges from 13 to 27 inches in thickness and is loam, sandy clay loam, or clay loam. At depths of 20 to 30 inches, the B2t horizon is mottled yellow, brown, or red. The B3 horizon is sandy loam, sandy clay loam, or loam mottled with yellow, strong brown, reddish yellow, and yellowish red. The C horizon is similar to the B3 horizon in texture and color. Mica flakes in the A and B2t horizons range from few to common and in the B3 and C horizons from common to many. Depth to bedrock generally is more than 6 feet. Reaction is slightly acid or strongly acid in the A horizon and strongly acid or very strongly acid in the B and C horizons.

Grover soils are adjacent to Cecil, Madison, and Tatum soils. They are not so red as any of those adjacent soils, and they contain less clay in the B horizon. Grover soils are deeper to bedrock than Madison and Tatum soils.

Figure 7.—An area of Davidson-Gwinnett association, hilly. These soils are commonly used for woodland and pasture.

Grover sandy loam, 2 to 6 percent slopes (GrB).—This soil has a profile similar to that described as representative for the series, except that the surface layer is 6 to 10 inches thick and the combined thickness of the surface layer and subsoil is 35 to 48 inches.

Included with this soil in mapping are areas where the surface layer is loam, some areas of soils that are gravelly, and small areas where the surface layer is more than 10 inches thick. Also included are small areas where the subsoil is clay or sandy clay, some areas of adjacent Cecil, Madison, and Tatum soils, and some profiles where the surface layer and subsoil are more than 48 inches in total thickness.

This soil is easy to work and can be worked throughout a wide range of moisture content. Surface runoff is medium, and the hazard of erosion is moderate.

A good cropping system keeps close-growing crops on this soil about half the time. An adequate rotation is 2 years of row crops and 2 years of sod. Terraces or contour stripcropping, contour farming, grassed waterways, and management of crop residue are needed to control erosion if this soil is used for cultivated row crops. The soil is well suited to irrigation.

This soil is suited to both broadleaf and needleleaf trees. Species suitable for planting are loblolly pine, slash pine, Virginia pine, and yellow-poplar. Pines are among the better suited species. This soil has few if any limitations that affect management.

Food and cover for all kinds of wildlife, except waterfowl and other wetland wildlife, can be produced in abundance. Capability unit IIe–31; woodland suitability group 3o7.

Grover sandy loam, 6 to 10 percent slopes (GrC).—This soil has a profile similar to that described as representative for the series, except that the surface layer is 4 to 8 inches thick and the combined thickness of the surface layer and subsoil is 40 to 48 inches.

Included with this soil in mapping are areas where the surface layer is loam and small areas where the subsoil is clay. Also included are small areas of severely eroded soils and small areas of adjacent Cecil, Madison, and Tatum soils.

This soil is suited to crops commonly grown in the county. Response to lime and fertilizer is good. Runoff is medium or rapid, and the hazard of erosion is severe.

A good cropping system keeps perennial sod crops on this soil 60 to 75 percent of the time. An adequate rotation is 2 years of sod crops and 1 year of row crops. Terraces or contour stripcropping, contour farming, grassed waterways, and management of crop residue are needed to control erosion if this soil is used for cultivated row crops. The soil is well suited to irrigation.

This soil is suited to both broadleaf and needleleaf trees. Species suitable for planting are loblolly pine, slash pine, Virginia pine, and yellow-poplar. Pines are among the better suited species. This soil has few if any limitations that affect management.

This soil can produce abundant food and cover for all kinds of wildlife, except waterfowl and other wetland wildlife. Capability unit IIIe–31; woodland suitability group 3o7.

Grover association, rolling (GvC).—A Grover soil in this mapping unit has the profile described as representative for the Grover series. The surface layer and subsoil range from 24 to 42 inches in combined thickness. Dominant slopes range from 2 to 15 percent.

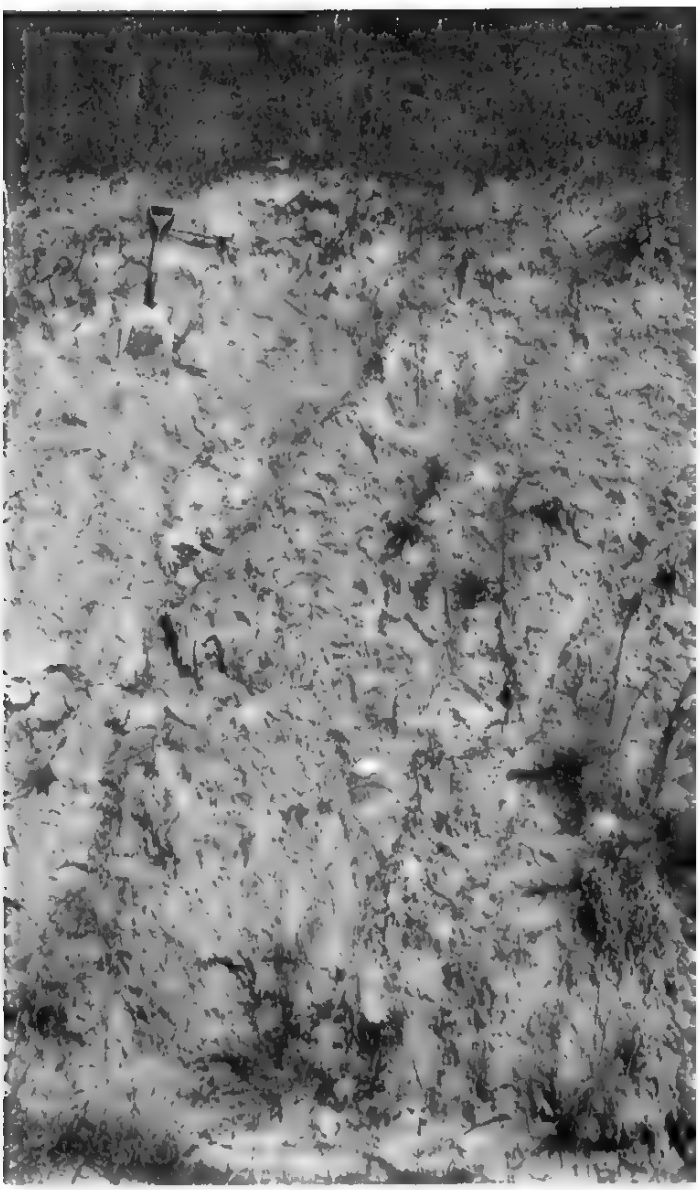

Figure 8.—Profile of a Grover sandy loam.

Grover soils make up about 84 percent of the association. Soils that are similar in behavior and need similar management make up the remaining acreage.

The delineations generally are much larger and the composition of this unit is more variable than most other mapping units in the county. Mapping has been controlled well enough, however, for the expected uses of the soils.

Included with this unit in mapping are some areas of soils that are more clayey in the subsoil and some areas of shallow soils. Also included are areas of soils that are gravelly and some small areas of severely eroded soils.

The soils in this association are suited to crops commonly grown in the county. Response to lime and fertilizer is good. Surface runoff is rapid, and the hazard of erosion is very severe.

A good cropping system keeps perennial sod crops on these soils 75 percent of the time. An adequate rotation is 3 years of sod crops and 1 year of row crops. Terraces or contour stripcropping, contour farming, grassed waterways, and management of crop residue are needed to control erosion if this soil is used for cultivated row crops. The soils are well suited to irrigation.

These soils are suited to both broadleaf and needleleaf trees. Species suitable for planting are loblolly pine, slash pine, Virginia pine, and yellow-poplar. Pines are among the better suited species. These soils have few if any limitations that affect management.

Food and cover for woodland wildlife can be produced in abundance. Capability unit IVe–31; woodland suitability group 3o7.

Gwinnett Series

The Gwinnett series consists of moderately deep, well-drained, moderately fine textured soils on uplands of the Piedmont. These soils formed in residuum weathered from hornblende gneiss or schist. Elevation ranges from 1,000 to 1,300 feet. Dominant slopes range from 13 to 25 percent.

In a representative profile the surface layer is dark reddish-brown clay loam about 5 inches thick. Next is about 25 inches of dark-red clay. Below this is partly weathered hornblende schist.

Runoff is rapid, and permeability is moderate. The available water capacity is low.

Gwinnett soils are suited to permanent pasture and hay crops commonly grown in the county. Response to lime and fertilizer is good. The hazard of erosion is very severe.

The native vegetation is a moderately dense stand of mixed hardwoods and pines. Only a small acreage of these soils has been cultivated, and most of this is now in loblolly pine. Some small areas are used for pasture.

The Gwinnett soils in this county are mapped only with Davidson soils.

Representative profile of Gwinnett clay loam in an area of Davidson-Gwinnett association, hilly, in a wooded area (old field) where the slope is 15 percent, about 4.5 miles east of Hollins, NE¼NE¼ sec. 13, T. 22 S., R. 5 E.:

Ap—0 to 5 inches, dark reddish-brown (2.5YR 2/4) clay loam, dark reddish brown (2.5YR 3/4) dry; weak, medium, granular structure; friable; many fine roots, common medium and large roots; 5 to 10 percent fragments less than 3 inches long; strongly acid; clear, smooth boundary.

B2t—5 to 30 inches, dark-red (2.5YR 3/6) clay, moist and dry; moderate, fine and medium, subangular blocky structure; friable; common fine and medium roots; strongly acid; clear, irregular boundary.

C—30 inches, partly weathered hornblende schist.

The solum ranges from 22 to 40 inches in thickness. The A horizon ranges from 4 to 8 inches in thickness and is clay loam or loam. It is dark reddish brown or dusky red. The content of angular fragments in the A horizon generally is less than 10 percent, by volume. The Bt horizon ranges from 15 to 34 inches in thickness and is clay or clay loam. It is dark red or dark reddish brown. The content of angular fragments and mica flakes in the Bt horizon generally is less than 5 percent. Reaction is strongly acid or very strongly acid throughout.

Gwinnett soils are adjacent to Davidson, Hiwassee, Madison, and Tatum soils. They are shallower to bedrock than Davidson and Hiwassee soils and are redder throughout than Madison and Tatum soils.

Hiwassee Series

The Hiwassee series consists of deep, well-drained, fine textured and moderately fine textured soils on uplands of the Piedmont. These soils formed in residuum weathered from hornblende gneiss. Elevation ranges from 900 to 1,300 feet. Dominant slopes range from 6 to 10 percent.

In a representative profile the surface layer is dark reddish-brown clay about 5 inches thick. Below this is 20 inches of dark-red clay. The next layer is 35 inches of red clay.

Runoff is medium, and permeability is moderate. The available water capacity is medium.

Hiwassee soils are well suited to crops commonly grown in the county. They are fairly easy to work and can be worked throughout a moderate range of moisture content. Response to lime and fertilizer is very good. The hazard of erosion is very severe.

The native vegetation is a moderately dense stand of mixed hardwoods and pines. Much of the acreage of these soils has been cultivated but is now in loblolly pines. Some areas are used for pasture, hay, or corn.

Representative profile of Hiwassee clay, 6 to 10 percent slopes, in a pasture, about 3.5 miles west of Ashland, NW¼SW¼ sec. 14, T. 20 S., R. 7 E.:

Ap—0 to 5 inches, dark reddish-brown (2.5YR 3/4) clay and reddish-brown (2.5YR 4/4) clay; strong, medium and coarse, granular structure; friable; common to many fine and very fine roots; few mica flakes; strongly acid; clear, smooth boundary.

B21t—5 to 25 inches, dark-red (2.5YR 3/6) clay, moist and dry; moderate, fine, subangular blocky structure; friable; slightly sticky, slightly plastic; common fine roots; clay films on faces of peds; few manganese concretions; few mica flakes; very strongly acid; diffuse, smooth boundary.

B22t—25 to 60 inches, red (2.5YR 4/6) clay, moist and dry; strong, medium, subangular blocky structure; friable; slightly plastic, slightly sticky; few fine roots; clay films on faces of peds; few manganese concretions; many mica flakes; strongly acid.

The solum ranges from 40 to more than 60 inches in thickness. The A horizon ranges from 3 to 9 inches in thickness and is clay or clay loam. It is dark reddish brown, dusky red, or dark red. The Bt horizon is dark-red clay in the upper 20 to 30 inches and is red clay or clay loam at depths of more than 35 inches. The clay content decreases with depth, and at a depth of 50 or more inches the texture of the Bt horizon generally is loam. Mica flakes and other weatherable minerals range from few in the upper part of the profile to many in the lower part. The content of angular fragments on and throughout the profile seldom is more than 15 percent, by volume. Reaction is strongly acid or very strongly acid throughout.

Hiwassee soils are adjacent to Davidson, Gwinnett, and Madison soils. They are deeper and redder than Madison soils. Hiwassee soils are not so deep as Davidson soils, but they are deeper than Gwinnett soils.

Hiwassee clay, 6 to 10 percent slopes (HcC).—This is the only Hiwassee soil mapped in the county. Included in mapping are small areas where the surface layer is dark brown or reddish brown, small areas of severely eroded soils, and some areas of soils that are gravelly. Also included are a few areas where the subsoil is clay loam or loam and small areas of adjacent Madison soils. Areas where slopes of less than 6 percent occupy about 18 percent of the unit also are included.

This soil is suited to crops commonly grown in the county. Response to lime and fertilizer is good.

A good cropping system keeps perennial sod on this soil 60 to 75 percent of the time. Terraces or contour stripcropping, contour farming, grassed waterways, and management of crop residue are needed to control erosion if this soil is used for cultivated row crops. The soil is suited to irrigation.

This soil is suited to both broadleaf and needleleaf trees. Species suitable for planting are loblolly pine, slash pine, Virginia pine, and yellow-poplar. Pines are among the better suited species. This soil has few if any limitations that affect management.

This soil is suited to producing habitat for all kinds of wildlife, except waterfowl and other wetland wildlife. Capability unit IVe–31; woodland suitability group 3o7.

Iredell Series

The Iredell series consists of moderately deep, moderately well drained, medium-textured soils on uplands of the Piedmont. These soils formed in residuum weathered from chloritic schist. Elevation ranges from 800 to 1,000 feet. Dominant slopes range from 2 to 7 percent.

In a representative profile the surface layer is brown gravelly loam about 7 inches thick. It overlies 22 inches of yellowish-brown clay that is very sticky and very plastic. Below this is schist.

Runoff is medium, and permeability is slow. The available water capacity is low.

Iredell soils are better suited to permanent sod crops for pasture or hay than to other uses. They are somewhat difficult to work and can be worked only within a moderate range of moisture content. Response to lime and fertilizer is fair. The hazard of erosion is severe.

The native vegetation is a low-density stand of mixed low-grade hardwoods and some pines. Some of the acreage of these soils has been cultivated but is now in loblolly pine. A very small acreage is used for pasture, hay, or corn.

The Iredell soils in this county are mapped only with Mecklenburg soils.

Representative profile of Iredell gravelly loam in an area of Iredell-Mecklenburg association, undulating, in a wooded area (old field) where the slope is 3 percent, about 3.5 miles northeast of Hollins, NE¼NE¼ sec. 11, T. 22 S., R. 5 E.:

Ap—0 to 7 inches, brown (10YR 4/3) gravelly loam; weak, medium, granular structure; friable; 20 percent quartz gravel, less than 2 inches in diameter; common fine and medium roots; medium acid; clear, wavy boundary.

B2t—7 to 29 inches, yellowish-brown (10YR 5/6) clay; ped surfaces yellowish brown (10YR 5/4); moderate, coarse and medium, angular blocky structure; very plastic and very sticky; few soft schist fragments; moderately thick, nearly continuous clay films and pressure faces on coarse faces of peds, and thinner coatings on smaller peds; very soft, black, shotlike concretions 1 to 5 millimeters in diameter; few fine and medium roots; slightly acid; gradual, irregular boundary.

R—29 inches, schist bedrock.

The solum ranges from 20 to 40 inches in thickness. The A horizon ranges from 4 to 8 inches in thickness. It is brown, dark brown, or dark yellowish brown and is gravelly loam or silt loam. The content of angular fragments on or in the A horizon ranges from 10 to 25 percent, by volume. The Bt horizon is clay, of which more than 50 percent is very sticky and very plastic. The Bt horizon is yellowish brown, dark yellowish brown, or brownish yellow. In many places there are mottles of gray or pale brown at depths of more than 15 to 20 inches. Reaction is medium acid or slightly acid in the A horizon and is slightly acid in the B horizon.

Iredell soils are adjacent to Madison, Mecklenburg, and Tatum soils. They are not so red in the subsoil as these soils but are more sticky and plastic.

Iredell-Mecklenburg association, undulating (ImB).—This is the only mapping unit of Iredell and Mecklenburg soils in this county. Dominant slopes range from 2 to 7 percent.

Iredell soils make up about 44 percent of the association, and Mecklenburg soils about 33 percent. Soils that are similar in behavior make up the remaining acreage.

The delineations generally are much larger and the composition of these units is more variable than other mapping units in the county. Mapping has been controlled well enough, however, for expected uses of the soils.

Included with this unit in mapping are some areas of shallower soils and small narrow areas of soils that formed in alluvium. Also included are some areas of soils that are cobbly.

The soils in this association are better suited to permanent sod crops for pasture or hay than to other uses. They are somewhat difficult to work and can be worked only within a moderate range of moisture content. Response to lime and fertilizer is fair to good.

These soils are better suited to needleleaf trees than to broadleaf trees. Species suitable for planting are loblolly pine, slash pine, Virginia pine, and eastern redcedar. Soil limitations that affect management are a moderate restriction to use of equipment and a moderate hazard of seedling mortality.

These soils can produce suitable food and cover for all wildlife, except for waterfowl. Capability unit IIIe–31; woodland suitability group 4c2.

Madison Series

The Madison series consists of moderately deep, well-drained, medium-textured and moderately coarse textured soils on the Piedmont uplands. These soils formed in residuum weathered from mica schist. Elevation ranges from about 900 to 1,300 feet. Slopes range from 2 to 40 percent.

In a representative profile the surface layer is brown gravelly sandy loam about 4 inches thick. The subsoil is red clay about 29 inches thick. Below this is highly weathered mica schist.

Runoff is medium to rapid, and permeability is moderate. The available water capacity is low.

Madison soils are suited to crops commonly grown in the county. They are fairly easy to work and can be worked throughout a moderate range of moisture content. Response to lime and fertilizer is good. The hazard of erosion is moderate to very severe.

The native vegetation is a moderately dense stand of mixed hardwoods and pines. About half the acreage of these soils has been cultivated, but much of this is now in loblolly pine. Many areas are used for pasture or hay, and some small areas are used for corn.

Representative profile of Madison gravelly sandy loam, 6 to 10 percent slopes, in a pasture, about 2.5 miles southeast of Ashland, SW¼SE¼ sec. 27, T. 20 S., R. 8 E.:

Ap—0 to 4 inches, brown (7.5YR 4/4) gravelly sandy loam; weak, medium, granular structure; very friable; common fine roots; common fine mica flakes; 15 to 20 percent angular fragments less than ½ inch across; strongly acid; abrupt, smooth boundary.

B21t—4 to 21 inches, red (2.5YR 4/8) clay; moderate, fine and medium, subangular blocky structure; friable; few fine roots; common fine and medium mica flakes; thin continuous clay film on faces of peds; strongly acid; gradual, smooth boundary.

B22t—21 to 33 inches, red (2.5YR 4/6) clay; weak, fine and medium, subangular blocky structure; friable; few fine roots; common fine and medium mica flakes; thin patchy clay film on faces of peds; strongly acid; clear, irregular boundary.

C—33 to 53 inches, highly weathered mica schist; few thin tongues of the Bt horizon extend into the upper 10 inches.

The solum ranges from 20 to 40 inches in thickness. Mica flakes throughout the solum are generally common but range from few to many. The A horizon ranges from 4 to 9 inches in thickness. It is dark brown, brown, dark yellowish brown, reddish brown, or yellowish red. The A horizon is gravelly sandy loam or loam. The content of angular fragments in the A horizon generally ranges from 15 to 30 percent, by volume. It is clay or clay loam and is red or yellowish red. In places there is a B1 or B3 horizon that is loam or clay loam generally less than 10 inches thick and is similar to the B2t horizon in color. The content of angular fragments in the B horizon is generally less than 10 percent. The C horizon is soft, highly weathered, multicolored mica schist. The A horizon is medium acid or strongly acid, and the B horizon is strongly acid or very strongly acid.

Madison soils are adjacent to Cecil, Davidson, Grover, Gwinnett, Iredell, Mecklenburg, and Tatum soils. Madison soils are not so deep as Cecil, Davidson, and Grover soils. They are more clayey in the B2t horizon than Grover soils and are redder in the B2t horizon than Grover and Iredell soils, but Madison soils are not so red as Davidson or Gwinnett soils. Madison soils have a different kind of clay than Tatum soils.

Madison loam, 2 to 6 percent slopes (MaB).—This soil has a profile similar to that described as representative for the series, except that the surface layer is loam about 5 to 9 inches thick and the subsoil is about 15 to 35 inches thick.

Included with this soil in mapping are areas where the surface layer is sandy loam and some areas that are gravelly. Also included are some areas where the surface layer is less than 5 inches or more than 9 inches in thickness and small areas that have a subsoil of clay loam. Areas where the subsoil is strong brown and some areas where the combined thickness of the surface layer and subsoil is more than 40 inches also are included.

This soil is suited to the crops commonly grown in the county. Response to lime and fertilizer is good. Surface runoff is medium, and the hazard of erosion is moderate.

A good cropping system keeps close-growing crops on the soil about half the time. An adequate rotation is 2 years of row crops and 2 years of sod. Terraces or contour stripcropping, contour farming, grassed waterways, and management of crop residue are needed to control erosion if this soil is used for cultivated row crops. The soil is well suited to irrigation.

This soil is suited to both broadleaf and needleleaf trees. Species suitable for planting are loblolly pine, slash pine, Virginia pine, and yellow-poplar. Pines are among the better suited species. This soil has few if any limitations that affect management.

Food and cover plants for all but waterfowl and other wetland wildlife can be grown in abundance. Capability unit IIe–31; woodland suitability group 3o7.

Madison gravelly sandy loam, 6 to 10 percent slopes (MdC).—This soil has the profile described as representative for the series. Included in mapping are areas where the surface layer is gravelly loam and small areas where the surface layer is less than 4 inches or more than 9 inches thick. Also included are small areas that have a subsoil of loam or clay loam and some areas that have a dark-red subsoil. Small areas of adjacent Cecil, Grover, and Hiwassee soils are also included.

This soil is suited to the crops commonly grown in the county. Response to lime and fertilizer is good. Surface runoff is medium, and the hazard of erosion is severe.

A good cropping system keeps close-growing crops on the soil about 60 to 75 percent of the time. An adequate rotation is 2 years of row crops and 3 years of sod. Terraces or contour stripcropping, contour farming, grassed waterways, and management of crop residue are needed to control erosion if this soil is used for cultivated row crops. This soil is well suited to irrigation. It is also suited to farm ponds (fig. 9).

This soil is suited to both broadleaf and needleleaf trees. Species suitable for planting are loblolly pine, slash pine, Virginia pine, and yellow-poplar. Pines are among the better suited species. This soil has few if any limitations that affect management.

Food and cover plants for wildlife can be grown in abundance. Fence rows, idle fields, ditchbanks, and odd-shaped areas are good sites for growing food and cover for rabbits, quail, songbirds, and other wildlife. Capability unit IIIe–31; woodland suitability group 3o7.

Madison-Riverview association, hilly (MrD).—Madison soils make up about 85 percent of this association, and Riverview soils about 11 percent. Soils that are similar to these soils in behavior make up the remaining acreage of the association.

The Madison soils have a profile similar to that described as representative for the series, except that the surface layer is 4 to 7 inches thick. The Riverview soils have a profile similar to that described as representative for their series, except that the surface layer is 6 to 12 inches thick, the subsoil is coarser textured, and the combined thickness of the surface layer and subsoil is 25 to 35 inches. Slope ranges from 3 to 15 percent. Elevation ranges from 900 to 1,300 feet.

The delineations generally are much larger and the composition of these units is more variable than other mapping units in the county. Mapping has been controlled well enough, however, for the expected uses of the soils.

Included in mapping are some areas of deeper soils, areas of less micaceous soils, and areas of shallow soils. Also included are small areas of soils that have a surface layer less than 4 inches thick, and some areas where the combined thickness of the surface layer and subsoil is more than 40 inches.

Figure 9.—**Farm pond on Madison gravelly sandy loam, 6 to 10 percent slopes. Such ponds provide water for livestock; many are stocked with fish.**

Soils of this mapping unit are suited to the crops commonly grown in the county. Response to lime and fertilizer is good. Surface runoff is medium or rapid, and the hazard of erosion is very severe.

A good cropping system keeps close-growing crops on these soils 60 to 75 percent of the time. An adequate rotation is 2 or 3 years of sod and 1 year of row crops. Terraces or contour stripcropping, contour farming, grassed waterways, and management of crop residue are needed to control erosion if these soils are used for cultivated row crops. The soils are well suited to irrigation.

These soils are suited to both broadleaf and needleleaf trees. Species suitable for planting are loblolly pine, slash pine, Virginia pine, and yellow-poplar. Pines are among the better suited species. The soils in this mapping unit have few if any limitations that affect management.

Food and cover plants for woodland wildlife can be grown in abundance. These soils are suited to the planting of crops for wildlife food. Capability unit IVe–31; woodland suitability group 3o7.

Madison-Tallapoosa-Tusquitee association, steep (MtE).—Madison soils make up about 50 percent of this association, Tallapoosa soils about 35 percent, and Tusquitee soils about 8 percent. Soils that are similar to these soils in behavior make up the remaining acreage of the association.

The Madison soils in this mapping unit have a profile similar to that described as representative for the series, except that the subsoil is 16 to 35 inches thick and the combined thickness of the surface layer and subsoil is 20 to 40 inches. The Tallapoosa soils have a profile similar to that described as representative for the series, except that the surface layer is 3 to 6 inches thick and the surface layer and subsoil are 10 to 15 inches in total thickness. The Tusquitee soils have the profile described as representative for the series. Slopes range from 15 to 40 percent. Elevation ranges from 1,000 to 1,300 feet.

The delineations generally are much larger and the composition of these units is more variable than other mapping units in the county. Mapping has been controlled well enough, however, for the expected uses of the soils.

Included with this unit in mapping are some areas of soils that are redder, some of soils that are shallower, and some of soils that are wetter. Some areas of included soils are cobbly, and some are stony. Also included are areas of soils where slopes are less than 15 percent or more than 40 percent, and small areas of severely eroded soils.

The soils of this unit are generally not suited to cultivated row crops, because of steepness. They are fairly well suited to permanent sod for pasture or hay. Surface runoff is rapid, and the hazard of erosion is severe.

These soils are suited to both needleleaf and broadleaf trees. Species suitable for planting are Virginia pine, longleaf pine, and redcedar. The needleleaf species are the better producers and should be favored under most conditions. Soil limitations that affect management are a hazard of erosion and moderate restrictions on use of equipment. In the better, more moist areas, yellow-poplar plantings grow well.

These soils can produce good quantities of food and natural cover for woodland wildlife. Capability unit VIe–31; woodland suitability group 3r8.

Mecklenburg Series

The Mecklenburg series consists of moderately deep and deep, well-drained, medium-textured soils on uplands of the Piedmont. These soils formed in residuum weathered from chloritic schist. Elevation ranges from 800 to 1,000 feet. Dominant slopes range from 2 to 7 percent.

In a representative profile the surface layer is reddish-brown gravelly loam about 6 inches thick. Next is 34 inches of red clay. Below this is schist bedrock.

Runoff is medium, and permeability is slow. The available water capacity is low.

Mecklenburg soils are better suited to permanent sod crops for pasture or hay than to other uses. They are fairly easy to work but can be worked only within a narrow range of moisture content. Response to lime and fertilizer is good. The hazard of erosion is slight.

The native vegetation is a moderately dense stand of mixed low-grade hardwoods and some pines. Most of the acreage of these soils has been cultivated but is now in loblolly pine. Small areas are used for pasture, corn, or hay.

The Mecklenburg soils in this county are mapped only with Iredell soils.

Representative profile of Mecklenburg gravelly loam in an area of Iredell-Mecklenburg association, undulating, in a cultivated area where the slope is 3 percent, about 2.4 miles northwest of Millerville, NW¼SW¼ sec. 7, T. 21 S., R. 7 E.:

Ap—0 to 6 inches, reddish-brown (5YR 4/4) gravelly loam; moderate, medium, granular structure; friable; few to common fine roots; 15 percent quartz fragments mostly less than 1 inch long; slightly acid; abrupt, smooth boundary.

B2t—6 to 40 inches, red (2.5YR 4/6) clay; weak, fine, subangular blocky structure; friable; few fine roots; patchy clay films on faces of peds; fragments of partly weathered bedrock occupy 30 percent, by volume, of lower part; slightly acid; gradual, irregular boundary.

R—40 inches, schist bedrock.

The solum ranges from 24 to 48 inches in thickness. The A horizon is gravelly silt loam or gravelly clay loam 4 to 7 inches thick. It is dark grayish brown, brown, reddish brown, or yellowish brown. The Bt horizon is 19 to 41 inches thick and is red or yellowish red. The Bt horizon is clay and generally has a clay content of more than 50 percent. Base saturation is more than 35 percent in the lower part of the Bt horizon. Reaction is slightly acid throughout.

Mecklenburg soils are adjacent to Iredell, Madison, and Tatum soils. They have a subsoil that is redder but not so sticky and plastic as that in Iredell soils. Mecklenburg soils have a higher base saturation than Madison or Tatum soils.

Riverview Series

The Riverview series consists of moderately deep, well-drained, medium-textured alluvial soils on flood plains of streams. These soils formed in materials washed from surrounding uplands. They are subject to occasional or frequent flooding of short duration, mainly late in winter or early in spring. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is dark yellowish-brown silt loam about 6 inches thick. It overlies 33 inches of brown loam or silt loam. The next layer

is 22 inches of mottled, brown loam over a layer of mottled fine sandy loam.

Runoff is slow, and permeability is moderate. The available water capacity is medium.

Riverview soils are well suited to most crops commonly grown in the county. Some crops are damaged by flooding. These soils are easy to work and can be worked throughout a moderately wide range of moisture content. Response to lime and fertilizer is good.

The native vegetation is a moderately to highly dense stand of mixed hardwoods and some pines. Much of the acreage of these soils has been cultivated and is now used for pasture, hay, or corn.

Representative profile of Riverview silt loam, in a cultivated area where the slope is 0 to 1 percent, about 1.75 miles northwest of Delta, NE¼NE¼ sec. 20, T. 18 S., R. 9 E.:

Ap—0 to 6 inches, dark yellowish-brown (10YR 4/4) silt loam; weak, fine, granular structure; friable; common fine roots; few fine mica flakes; strongly acid; clear, smooth boundary.

B21—6 to 30 inches, brown (7.5YR 4/4) loam; weak, fine and medium, subangular blocky structure; friable; few fine roots; common to many fine mica flakes; strongly acid; gradual, smooth boundary.

B22—30 to 39 inches, brown (10YR 4/3) silt loam; weak, fine and medium, subangular blocky structure; friable; common fine mica flakes; strongly acid; gradual, smooth boundary.

C1—39 to 61 inches, brown (10YR 4/3) loam; common, fine, distinct mottles of grayish brown; massive; friable; common fine mica flakes; strongly acid; gradual, smooth boundary.

C2—61 to 65 inches, mottled gray (10YR 6/1), dark grayish-brown (10YR 4/2) and yellowish-brown (10YR 5/6) fine sandy loam; massive; friable; common to many fine mica flakes; strongly acid.

The solum ranges from 26 to 40 inches in thickness. Mica flakes throughout the solum range from few to many. The A horizon ranges from 5 to 10 inches in thickness and is dark brown, dark yellowish brown, or brown. The B horizon is silt loam or loam of dark brown, dark yellowish brown or brown. At depths of more than 30 inches, the B horizon generally is mottled with various shades of brown, yellow, and gray. The C horizon is silt loam, loam, or sandy loam and is mottled with various shades of brown, yellow, and gray. Reaction is strongly acid throughout the profile.

Riverview soils are adjacent to Abell, Altavista, Chewacla, Roanoke, and Toccoa soils. They are finer textured than Toccoa soils, are better drained than Altavista, Chewacla, and Roanoke soils, and do not have as well developed profiles as Abell, Altavista, Chewacla, and Roanoke soils.

Riverview silt loam (Re).—This soil has the profile described as representative for the Riverview series. Slopes range from 0 to 2 percent.

Included with this soil in mapping are areas where the surface layer is loam, some profiles that are reddish brown or dark reddish brown throughout, and small areas that have gray mottles at a depth of less than 30 inches. Also included in areas adjacent to streams are soils that have thin strata of sandy material. Some profiles that have a surface layer and subsoil more than 40 inches in thickness and small areas of adjacent Abell, Altavista, and Toccoa soils also are included.

This soil is suited to most crops commonly grown in the county. Crops that occupy fields in winter and early in spring are occasionally damaged by flooding. Response to lime and fertilizer is good.

Cultivated crops can be grown year after year. Crop residue should be returned to the soil. Cover crops are needed if low-residue row crops are grown. This soil is well suited to irrigation.

This soil is suited to both needleleaf and broadleaf trees. Species suitable for planting are loblolly pine, slash pine. yellow-poplar, sycamore, black walnut, cottonwood, and sweetgum. Seedling mortality is a slight hazard on this soil.

This soil can produce abundant food and cover for most wildlife. Capability unit IIw–32; woodland suitability group 1o7.

Roanoke Series

The Roanoke series consists of deep, poorly drained, medium-textured soils on low stream terraces. These soils formed in materials washed from surrounding uplands. They are subject to ponding or flooding, and the water table is near the surface late in winter and early in spring and is within 25 inches of the surface throughout most of the year.

In a representative profile the surface layer is dark grayish-brown and dark yellowish-brown silt loam about 7 inches thick. Next is 21 inches of gray clay loam or clay that is distinctly mottled with yellowish brown and light olive brown. Below this is 37 or more inches of gray clay that is prominently mottled with brown and is sticky and plastic. Depth to bedrock is more than 6 feet.

Runoff and permeability are slow. The available water capacity is medium.

Roanoke soils are better suited to water-tolerant pasture and hay plants than to other uses. If these soils are drained, they are fairly easy to work and can be worked throughout a moderate range of moisture content. Response to lime and fertilizer is good.

The native vegetation is a moderately to highly dense stand of mixed hardwoods. Only a small acreage of these soils has been cultivated, and most of this is now used for pasture. Small areas are in loblolly pine.

Representative profile of Roanoke silt loam, in a pasture where the slope is 0 to 1 percent, about 1.5 miles north of Delta, SW¼NW¼ sec. 15, T. 18 S., R. 9 E.:

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) and dark yellowish-brown (10YR 3/4) silt loam; weak, medium, granular structure; very friable; common fine roots; common fine mica flakes; very strongly acid; clear, smooth boundary.

B21t—7 to 14 inches, gray (10YR 5/1) clay loam; common, medium, distinct, yellowish-brown mottles; weak, fine and medium, subangular blocky structure; friable; few fine roots; common fine mica flakes; patchy clay films in large pores, sand bridged and coated with clay; strongly acid; clear, wavy boundary.

B22t—14 to 28 inches, gray (N 5/0) clay; common, medium, distinct, yellowish-brown and light olive-brown mottles; moderate, medium, subangular blocky structure; friable; few fine roots; common fine mica flakes; thin clay films mostly on faces of peds; strongly acid; gradual, wavy boundary.

B23t—28 to 65 inches, gray (N 5/0) clay; many, medium, prominent mottles of yellowish brown and light yellowish brown; strong, medium, blocky structure; firm, sticky and plastic; 5 to 10 percent angular quartz fragments; strongly acid.

The solum is more than 60 inches thick. Mica flakes are common throughout the profile. The A horizon ranges from 4 to 8 inches in thickness and is very dark grayish brown,

dark grayish brown, dark yellowish brown, dark brown, or brown. The B2t horizon is more than 30 inches thick and is clay or clay loam. It is dark gray, gray, light gray, or light brownish gray. Few to many, faint to prominent mottles of yellow, brown, or red generally are throughout the Bt horizon. Reaction is strongly acid or very strongly acid throughout. The water table is near the surface late in winter and early in spring and is within 25 inches of the surface throughout most of the year.

Roanoke soils are adjacent to Abell, Altavista, Chewacla, Riverview, and Toccoa soils. They are more poorly drained than any of these adjacent soils. Roanoke soils have better profile development than Chewacla, Riverview, and Toccoa soils and are not so coarse textured as Toccoa soils.

Roanoke silt loam (Ro).—This is the only Roanoke soil mapped in this county. Slopes range from 0 to 2 percent.

Included with this soil in mapping are areas where the surface layer is loam, some areas where the subsoil is loam, and some areas that have a surface layer and subsoil less than 60 inches in combined thickness. Also included are some areas covered with overwash that is 2 to 6 inches thick and has colors ranging from dark yellowish brown to dark reddish brown. Small areas of adjacent Abell, Altavista, and Chewacla soils also are included.

This soil is suited to water-tolerant pasture and hay plants. Corn and other cultivated row crops can be grown if a good drainage system is installed. Response to lime and fertilizer is moderate.

If drainage is adequate, cultivated crops can be grown year after year. Crop residue should be returned to the soil if row crops are grown. Excess water is a limitation, except during long dry periods. The soil is, however, suited to irrigation if drought occurs.

This soil is suited to both needleleaf and broadleaf trees. The native vegetation is mixed hardwoods, but if pines are established, they produce at a rapid rate. Species suitable for planting are ash, loblolly pine, slash pine, sweetgum, and sycamore. In areas that are drained, cottonwood and yellow-poplar grow well. This soil has a severe limitation to use of equipment and a moderate hazard of seedling mortality.

This soil is well suited to wild plants that provide food and cover for wildlife, especially for waterfowl and other wetland species. Capability unit IVw–31; woodland suitability group 2w9.

Tallapoosa Series

The Tallapoosa series consists of shallow, well-drained, medium-textured soils on uplands of the Piedmont. These soils formed in residuum weathered from slate. Highly weathered bedrock is at a depth of 10 to 20 inches. Slopes range from 15 to 35 percent.

In a representative profile the surface layer is brown gravelly loam about 4 inches thick. It overlies 10 inches of yellowish-red clay loam. Below this is slate that has varying degrees of hardness.

Runoff is rapid, and permeability is moderate. The available water capacity is low.

Tallapoosa soils generally are not suited to cultivated row crops. They are better suited to woodland or permanent sod crops for pasture or hay. Because of steep slopes, these soils are difficult to work. Response to lime and fertilizer is moderate. The hazard of erosion is severe.

The native vegetation is a low-density stand of mixed hardwoods and pines. All the acreage of these soils is in woodland.

The Tallapoosa soils in this county are mapped only with Madison, Riverview, Tatum, and Tusquitee soils.

Representative profile of Tallapoosa gravelly loam in an area of Tatum-Tallapoosa-Riverview association, steep, in a wooded area where the slope is 30 percent, about 3.3 miles north of Hollins Tower, NE¼NE¼ sec. 10, T. 21 S., R. 5 E.:

A—0 to 4 inches, brown (7.5YR 4/4) gravelly loam; weak, medium, granular structure; very friable; common fine and medium roots; 20 percent angular fragments less than 1 inch across; very strongly acid; clear, smooth boundary.

B2t—4 to 14 inches, yellowish-red (5YR 5/6) clay loam; weak, medium, subangular blocky structure; friable; thin patchy clay films on faces of peds; common fine and medium roots; strongly acid; clear, irregular boundary.

B3—14 to 18 inches, yellowish-red (5YR 5/6) slaty loam and about 40 percent reddish-yellow (5YR 6/6), weathered slate; weak, platy structure; friable; slate fragments firm; few fine roots; discontinuous clay films on slate fragments; strongly acid; gradual, broken boundary.

C—18 inches, slate.

The solum ranges from 10 to 20 inches in thickness. The A horizon ranges from 3 to 7 inches in thickness and is dark brown, dark yellowish brown, yellowish brown, or brown. It is dominantly gravelly loam but, in some places, is gravelly silt loam. The content of angular fragments in the A horizon ranges from 10 to 25 percent. The B2t horizon ranges from 3 to 10 inches in thickness and is yellowish red, strong brown, or yellowish brown. It is clay loam, loam, or sandy loam. The content of angular fragments in the Bt horizon ranges from 0 to 15 percent. Reaction is strongly acid or very strongly acid throughout.

Tallapoosa soils are adjacent to Allen, Madison, Tatum, and Tusquitee soils. They are shallower to bedrock than all of these adjacent soils.

Tatum Series

The Tatum series consists of moderately deep, well-drained, medium-textured and moderately coarse textured soils on uplands of the Piedmont. These soils formed in residuum weathered from slate. Dominant slopes range from 2 to 30 percent.

In a representative profile the surface layer is very dark grayish-brown gravelly loam and brown loam about 6 inches thick. It overlies 19 inches of red clay. Below this are slate bedrock that has varying degrees of hardness and some thin lenses of soil material in the upper 17 inches.

Runoff is medium, and permeability is moderate. The available water capacity is low.

Tatum soils that have slopes of 2 to 15 percent are suited to crops commonly grown in the county. They are fairly easy to work and can be worked throughout a moderate range of moisture content. Response to lime and fertilizer is good. The hazard of erosion is severe or very severe.

The native vegetation is a low- or moderate-density stand of mixed hardwoods and pines. Some of the acreage of these soils has been cultivated, but most of this is now in loblolly pine. Some areas are used for pasture, hay, or corn.

Representative profile of Tatum gravelly loam in an area of Tatum-Chewacla association, hilly, in a wooded area where the slope is 12 percent, about 2 miles southeast

of Corinth Church, NW¼NW¼ sec. 24, T. 21 S., R. 9 E.:

A1—0 to 2 inches, very dark grayish-brown (10YR 3/2) gravelly loam; weak, fine, granular structure; very friable; common fine and medium roots; 15 percent angular quartz fragments, mostly less than 3 inches across; very strongly acid; abrupt, smooth boundary.

A3—2 to 6 inches, brown (10YR 4/3) loam; weak, fine, granular structure; very friable; common fine and medium roots; 10 percent angular quartz fragments; strongly acid; abrupt, smooth boundary.

B2t—6 to 25 inches, red (2.5YR 4/8) clay; strong, medium, subangular blocky structure; firm; few fine and medium roots; thin patchy clay films on faces of peds; very strongly acid; clear, wavy boundary.

C1—25 to 42 inches, brownish-yellow (10YR 5/6) highly weathered slate and red (2.5YR 4/6) silt loam; rock-controlled structure; firm in place, easily dug and crushed; gradual, wavy boundary.

C2—42 inches, multicolored slate.

The solum ranges from 20 to 40 inches in thickness. The A horizon ranges from 3 to 9 inches in thickness. It is very dark grayish brown, dark grayish brown, dark yellowish brown, grayish brown, brown, yellowish brown, strong brown, or reddish brown. The A horizon is gravelly loam, gravelly silt loam, or gravelly sandy loam. The content of angular fragments in the A horizon ranges from 10 to 30 percent. The Bt horizon is clay or clay loam and is yellowish red or red. The C horizon is weathered multicolored slate. Reaction is strongly acid or very strongly acid throughout.

Tatum soils are adjacent to Allen, Clymer, Madison, Tallapoosa, and Tusquitee soils. They are deeper than Tallapoosa soils but not so deep as Allen and Tusquitee soils. Tatum soils differ from Madison soils in having a different kind of clay. They are more clayey in the subsoil and are deeper to bedrock than Clymer soils.

Tatum-Chewacla association, hilly (TcD).—Tatum soils and similar soils that are less red in the subsoil make up about 75 percent of this association, and Chewacla and similar soils about 11 percent. Shallow soils make up the remaining acreage.

The profile of the Tatum soils is the one described as representative for the Tatum series. The profile of the Chewacla soils is similar to that described as representative for the Chewacla series, except that the surface layer is more variable in thickness and thin strata of more contrasting textures are in the subsoil. Dominant slopes range from 2 to 15 percent. Elevation ranges from 700 to 1,100 feet.

The delineations generally are much larger and the composition of these units is more variable than other mapping units in the county. Mapping has been controlled well enough, however, for the expected uses of the soils.

Included with this unit in mapping are some areas of shallow soils, areas of soils that are cobbly, and areas of soils that are stony. Also included are areas of soils where slopes are more than 15 percent and small areas of severely eroded soils.

The soils in this association are suited to crops commonly grown in the county. Response to lime and fertilizer is good. Surface runoff is medium, and the hazard of erosion is very severe.

A good cropping system keeps close-growing crops on these soils 60 to 75 percent of the time. An adequate rotation is 2 or 3 years of sod crops (fig. 10) and 1 year of

Figure 10.—A pasture of fescue and clover on the Tatum-Chewacla association, hilly. In the background is a wooded area of Tatum-Tallapoosa-Riverview association, steep.

row crops. Terraces or contour stripcropping, contour farming, grassed waterways, and management of crop residue are needed to control erosion if these soils are used for cultivated row crops. The soils are well suited to irrigation.

These soils are better suited to needleleaf trees than to broadleaf trees. Species suitable for planting are loblolly pine (fig. 11), Virginia pine, longleaf pine, slash pine and eastern redcedar. These soils have slight limitations that affect management. A small part of this association that is steep is affected by a moderate hazard of erosion and moderate restriction on the use of equipment.

Soils in this association are suited to the production of food and cover for all kinds of wildlife, except waterfowl and other wetland wildlife. Capability unit IVe–31; woodland suitability group 4o1.

Tatum-Tallapoosa-Riverview association, steep (TrE).—Tatum soils and similar soils that have less red in the subsoil make up about 70 percent of this association, Tallapoosa soils make up 20 percent, and Riverview soils make up 6 percent. Soils that are similar in behavior account for the remaining acreage.

The Tatum soils in this mapping unit have a profile similar to that described as representative for the series, except that the surface layer is 3 to 7 inches thick and the surface layer and subsoil generally is 20 to 30 inches thick. The Tallapoosa soils have the profile described as representative for the Tallapoosa series. The profile of the Riverview soils is similar to that described as representative for the Riverview series, except that the surface layer is 4 to 10 inches thick and the subsoil is more contrasting in texture. Dominant slopes range from 15 to 30 percent. Elevation ranges from 700 to 1,100 feet.

The delineations generally are much larger and the composition of these units is more variable than other mapping units in the county. Mapping has been controlled well enough, however, for the expected uses of the soils.

Included with this unit in mapping are some areas of yellower soils that have a high content of fragments, and some soils that are wetter. Also included are some areas that are cobbly and some that are stony. Some areas where slopes are less than 15 percent or more than 30 percent and small areas of severely eroded soils also are included.

These soils generally are not suited to cultivated row crops, because of steep slopes. They are fairly well suited to permanent sod crops for pasture or hay. Surface runoff is rapid, and the hazard of erosion is severe.

The soils in this association are moderately productive and are well suited to needleleaf trees. Species suitable for planting are loblolly pine, Virginia pine, longleaf pine, slash pine, and eastern redcedar. Soil limitations that affect management are a moderate hazard of erosion, moderate restrictions on the use of equipment, and a slight hazard of seedling mortality.

Food and cover for woodland wildlife can be produced in abundance. Capability unit VIe–31; woodland suitability group 4r2.

Figure 11.—A well-managed, planted stand of young loblolly pines. This is an area of Tatum-Chewacla association, hilly.

Toccoa Series

The Toccoa series consists of well-drained, moderately coarse textured soils that are on flood plains of streams. These soils formed in alluvium washed from surrounding uplands. They are subject to occasional or frequent flooding of short duration, mainly late in winter or early in spring. Slopes range from 0 to 2 percent.

In a representative profile the surface layer is dark yellowish-brown sandy loam about 8 inches thick. Below this is 57 inches of dark yellowish-brown and strong-brown sandy loam.

Runoff is slow, and permeability is moderately rapid. The available water capacity is low.

Toccoa soils are well suited to most crops commonly grown in the county. Some crops are damaged by flooding. These soils are very easy to work and can be worked throughout a wide range of moisture content. Response to lime and fertilizer is good.

The native vegetation is a highly dense stand of mixed hardwoods and some pines. Most of the acreage of these soils has been cultivated but is now used for pasture. Small areas are in loblolly pine.

Representative profile of Toccoa sandy loam, in a wooded area (old field) where the slope is 0 to 1 percent, about 2 miles northwest of Cragford, NW¼NW¼ sec. 23, T. 20 S., R. 9 E.:

Ap—0 to 8 inches, dark yellowish-brown (10YR 4/4) sandy loam; weak, fine, granular structure; very friable; common fine and medium roots; few fine mica flakes; medium acid; clear, smooth boundary.
C1—8 to 23 inches, dark yellowish-brown (10YR 4/4) sandy loam; single grain; very friable; common fine and medium roots; few fine mica flakes; medium acid; clear, smooth boundary.
C2—23 to 65 inches, strong-brown (7.5YR 5/6) sandy loam; single grain; very friable; common fine and medium roots; few fine mica flakes; slightly acid.

The A horizon ranges from 8 to 15 inches in thickness and is dark brown, dark yellowish brown, brown, yellowish brown, pale brown, light yellowish brown, light brown, strong brown, or reddish brown. The C horizon is sandy loam, loam, or silt loam and has colors similar to the A horizon. In places at depths greater than 20 inches, there are few to common mottles of gray. Mica flakes throughout the profile range from few to common. Angular fragments occupy less than 5 percent of the profile, by volume. Gravel strata occur at depths below 40 inches in some profiles. Reaction is slightly acid or medium acid throughout.

Toccoa soils are adjacent to Abell, Altavista, Chewacla, Riverview, and Roanoke soils. They are coarser textured and have less profile development than any of these adjacent soils. Toccoa soils are better drained than Altavista, Chewacla, and Roanoke soils.

Toccoa sandy loam (Ts).—This is the only Toccoa soil mapped in this county. It is widely distributed along some of the larger streams, but the total acreage is small. Slopes range from 0 to 2 percent.

Included with this soil in mapping are areas where the surface layer is loam or silt loam and small areas that have a subsurface layer of loamy sand. Also included are areas that have gray mottles within a depth of 20 inches and small areas that have gravel strata at depths of 30 to 40 inches. Small areas of adjacent Abell, Altavista, Chewacla, and Riverview soils also are included.

This soil is suited to most crops commonly grown in the county. Crops that occupy fields in winter and early in spring are occasionally damaged by flooding. Response to lime and fertilizer is good.

Cultivated crops can be grown year after year. Crop residue should be returned to the soil. Cover crops are needed if low-residue row crops are grown. The soil is well suited to irrigation.

This soil is suited to both needleleaf and broadleaf trees. Species suitable for planting are loblolly pine, slash pine, yellow-poplar, sycamore, black walnut, cottonwood, and sweetgum.

This soil can produce abundant food and cover for most wildlife. Capability unit IIw–32; woodland suitability group 1o7.

Tusquitee Series

The Tusquitee series consists of deep, well-drained, medium-textured soils on uplands of the Piedmont. These soils formed in colluvial material on foot slopes at the base of steep slopes and around the head of and along drainageways in the west-central part of the county. Dominant slopes are 10 to 20 percent.

In a representative profile the surface layer is very dark grayish-brown loam about 9 inches thick. Next is 39 inches of dark-brown clay loam and brown loam. Below this is highly weathered mica schist.

Runoff is rapid, and permeability is moderate. The available water capacity is medium.

Tusquitee soils generally are not suited to cultivated row crops. They are better suited to woodland or permanent sod crops for pasture or hay. Because of steep slopes, these soils are somewhat difficult to work. Response to lime and fertilizer is good. The hazard of erosion is severe.

The native vegetation is a moderately to highly dense stand of mixed hardwoods and some pines. In places there is an understory of laurel. Practically all the acreage of these soils is in woodland.

The Tusquitee soils in this county are mapped only with Madison and Tallapoosa soils.

Representative profile of Tusquitee loam in an area of Madison-Tallapoosa-Tusquitee association, steep, in a wooded area where the slope is 15 percent, about 1.75 miles southwest of Bowden Grove Church, NE¼SW¼ sec. 12, T. 20 S., R. 7 E.:

A—0 to 9 inches, very dark grayish-brown (10YR 3/2) loam; weak, fine, granular structure; very friable; common fine roots; 10 percent angular fragments; strongly acid; clear, smooth boundary.
B21t—9 to 21 inches, dark-brown (7.5YR 4/4) clay loam; moderate, medium, subangular blocky structure; friable; very thin clay films on faces of peds; few fine and medium roots; 5 percent angular fragments; medium acid; gradual, smooth boundary.
B22t—21 to 48 inches, brown (7.5YR 5/4) loam; weak, medium, subangular blocky structure; friable; thin clay films on faces of peds; 5 percent angular fragments; medium acid; clear, wavy boundary.
C—48 inches, highly weathered mica schist.

The solum ranges from 40 to 60 or more inches in thickness. The A horizon ranges from 6 to 15 inches in thickness. It is very dark brown, very dark grayish brown, dark brown, or dark yellowish brown. The A horizon is loam or fine sandy loam, either of which can be gravelly. The B2t horizon ranges from 25 to 50 inches in thickness. It is dark brown, dark yellowish brown, yellowish brown, brown, strong brown, reddish brown, or yellowish red. The B2t horizon is loam or clay loam. The content of angular fragments in the Bt horizon seldom is more than 10 percent. Mica flakes throughout the profile range from none to common. Reaction is strongly acid or medium acid throughout.

Tusquitee soils are adjacent to Madison and Tallapoosa soils. They are less clayey and less red than the Madison soils and have a thicker solum than the Tallapoosa soils.

Use and Management of the Soils

This section contains information about the use and management of soils of Clay County for crops and pasture, woodland, wildlife habitat, engineering, and town and country planning. It explains the system of capability classification used by the Soil Conservation Service and gives estimated yields of principal crops. Information about the management of individual soils is given in the section "Descriptions of the Soils."

This section contains tables that give information about the soils significant in engineering, as well as a table that gives rating of soils for selected uses in town and country planning.

General Management Practices [2]

Lime and fertilizers.—The amounts and kinds of lime and fertilizer to grow a particular crop will depend on

[2] L. D. WILLIAMS, conservation agronomist, Soil Conservation Service, assisted in the preparation of this section.

the requirements of the plant and how the soil has been fertilized and managed in the past years. The need for lime and fertilizer should be determined by soil testing.

Minimum tillage.—The frequent use of heavy farm machinery has resulted in compacted layers in the upper part of the subsoil of many fields that are intensively used for row crops. These compacted layers, generally referred to as plowpans or trafficpans, restrict the root development of plants and retard the movement of soil water. These conditions result in reduced crop yields. Chiseling, subsoiling, and deep plowing have been used to give temporary relief. Minimum tillage practices that reduce the number of tillage operations are effective in preventing the formation of compacted layers. They also are effective in reducing soil erosion and loss of rainwater as runoff.

Pasture and hayland management.—Several practices used for pasture and hayland apply to all mapping units. Among these are proper grazing or cutting heights, weed control, proper fertilization, rotational grazing, and scattering droppings. Cool-season perennial grasses, such as tall fescue and orchardgrass, need to be rested in summer so that food is stored for growth in fall and early in spring. Overgrazing and low fertilization results in weak plants and poor stands that are quickly infested with weeds. The best way to prevent weeds from becoming established is to keep a good, dense ground cover with the desired pasture species.

Capability Grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The soils are grouped according to their limitations when used for field crops, the risk of damage when they are so used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for range, for forest trees, or engineering.

In the capability system, the kinds of soils are grouped at three levels: the class, the subclass, and the unit. Following is a descriptive outline of the system as it applies to Clay County. The placement of any mapping unit in the grouping can be learned by turning to the "Guide to Mapping Units" at the back of this survey, or by reffering to the notation that ends the description of each mapping unit in the section that describes the soils of the county.

The capability units are not numbered consecutively in this county, because they fit into a statewide system of capability classification, and not all the capability units in the system are represented in Clay County.

Class I soils have few limitations that restrict their use.
- Unit I–31—Deep, nearly level, well-drained soils that are loamy throughout; on stream terraces.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
- Subclass IIe—Gently sloping soils that are subject to erosion if not protected.
  - Unit IIe–31—Gently sloping, moderately deep and deep, well-drained soils that have a loamy surface layer and a loamy or clayey subsoil; on uplands.
- Subclass IIw—Soils that have moderate limitations because of excess water or overflow.
  - Unit IIw–31—Nearly level, deep, moderately well drained soils that are loamy throughout; on stream terraces.
  - Unit IIw–32—Nearly level, well-drained soils that are loamy throughout; on flood plains that are frequently flooded.

Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.
- Subclass IIIe—Soils that are subject to severe erosion and have severe limitations because of slope and erosion.
  - Unit IIIe–31—Undulating to rolling, moderately deep to deep, moderately well drained to well drained soils that are loamy and clayey in the subsoil and are subject to severe erosion if not protected; on uplands.
- Subclass IIIw—Nearly level soils on flood plains or low stream terraces that have limitations because of flooding.
  - Unit IIIw–32—Nearly level, somewhat poorly drained to well-drained soils that are subject to flooding and are loamy throughout.

Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both.
- Subclass IVe—Soils that are very severely limited by slope and risk of erosion if not protected.
  - Unit IVe–31—Nearly level to hilly, moderately deep to deep soils that range from loamy to clayey in the surface layer and subsoil.
- Subclass IVw—Soils that have very severe limitations for cultivation because of wetness.
  - Unit IVw–31—Nearly level, deep, poorly drained, slowly permeable soils on stream terraces.

Class V soils are subject to little or no erosion but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland, or wildlife. (No class V soils in Clay County)

Class VI soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife.
- Subclass VIe—Steep with severe limitations chiefly because of slope.
  - Unit VIe–31—Steep, shallow to deep, well-drained, loamy soils; mostly on uplands, but also on flood plains.

Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture or range, woodland, or wildlife.

Subclass VIIe—Soils that have severe limitations for commercial production of plants.

Unit VIIe–32—Steep, moderately deep, well-drained soils that are loamy throughout and are chiefly used for recreation areas; on steep hillsides and mountains.

Class VIII soils and landforms have limitations that preclude their use for commercial production of plants and restrict their use to recreation, wildlife, or water supply, or to esthetic purposes. (No class VIII soils in Clay County)

As shown in the foregoing list, the broadest grouping, the capability class, is designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use.

Capability subclasses are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations.

Capability units are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe–31 or IIIw–32. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraphs; and the Arabic numeral specifically identifies the capability unit within each subclass.

Estimated Yields

Yields of crops depend chiefly on the tilth and fertility of the soil and on a sufficient supply of moisture at the time of planting and throughout the growing season. Consistently favorable yields indicate that fertility has been kept high, good tilth has been maintained, and rainwater has been held and stored in the soil.

Table 2 shows the estimated yields per acre of the principal crops grown in the county. These yields are those that can be expected under the highest level of management practices that are feasible for use in this county.

TABLE 2.—*Estimated yields per acre of principal crops*

[Yields are those that can be expected under the highest level of management that is feasible. Dashed lines indicate that the crop is not commonly grown or that yields are too variable for meaningful estimates to be made]

Soil	Corn	Pasture			Hay
		Fescue	Bahia-grass	Coastal bermuda-grass	Sericea lespedeza
	Bu.	*A.U.M.*[1]	*A.U.M.*[1]	*A.U.M.*[1]	*Tons*
Abell loam	85	6.5	7.0	7.0	---
Allen association, rolling	60	5.0	6.0	---	3.0
Altavista complex	80	7.0	8.0	8.0	---
Cecil association, rolling	65	5.0	6.0	6.0	2.5
Chewacla-Riverview complex	85	7.0	8.0	---	---
Clymer association, steep	---	---	---	---	---
Davidson-Gwinnett association, hilly	60	---	6.0	---	2.5
Grover sandy loam, 2 to 6 percent slopes	75	6.0	7.0	7.5	3.0
Grover sandy loam, 6 to 10 percent slopes	70	5.5	6.5	7.0	2.5
Grover association, rolling	65	5.0	6.0	6.0	3.0
Hiwassee clay, 6 to 10 percent slopes	75	6.0	7.0	6.5	3.0
Iredell-Mecklenburg association, undulating	45	6.0	6.0	---	---
Madison loam, 2 to 6 percent slopes	75	6.5	7.5	7.5	3.0
Madison gravelly sandy loam, 6 to 10 percent slopes	75	6.0	7.0	7.0	2.5
Madison-Riverview association, hilly	50	5.5	7.0	7.5	3.5
Madison-Tallapoosa-Tusquitee association, steep	---	---	---	---	---
Riverview silt loam	85	6.5	7.0	7.5	3.0
Roanoke silt loam	---	5.5	7.0	---	---
Tatum-Chewacla association, hilly	40	4.0	5.0	5.0	2.7
Tatum-Tallapoosa-Riverview association, steep	---	---	---	---	---
Toccoa sandy loam	80	7.0	7.5	7.5	4.5

[1] A.U.M. stands for animal-unit-month. The figures represent the number of months that 1 acre will provide grazing for one animal (1,000 pounds live weight), or the number of months the pasture can be grazed multiplied by the number of animal units an acre will support.

Under this level of management, the following practices are assumed:

1. Soil-improving crops, cover crops, and crops that produce a large amount of residue are grown in the rotation.
2. Crop residue is kept on the surface to help control erosion.
3. Water is conserved by using all the practices needed, including terracing and contour farming.
4. Fertilizer is applied according to crop requirements and soil tests.

Under a high level of management, farming operations are carried out at the most appropriate time. Terraces and waterways are well maintained; crop residue is used to improve tilth, as well as to control erosion; and a good program is followed for controlling insects.

Use of the Soils for Woodland [3]

Clay County has approximately 315,800 acres of woodland (*2*). This is about 82 percent of the land area of the county. Most of the woodland is owned by private individuals and wood-using industries, but 66,300 acres are owned by the U.S. Government.

The woodland ranges from hardwoods on the bottom land along some of the major creeks to pure stands of Virginia and longleaf pines on the tops of the Cheaha and Talladega Mountains. Among the forest types in the county are oak, sweetgum, and yellow-poplar on bottom land; oak and hickory; oak and pine; loblolly and shortleaf pines; and Virginia pine (*9*).

All of the wooded soils, except for the steep, stony, or very shallow soils, are capable of producing good, merchantable timber and justify the use of woodland management practices. The soils have been placed in 10 woodland suitability groups. These are described in table 3.

Woodland suitability groups

The soils of Clay County have been placed in woodland suitability groups to assist owners in planning the use of their soils for wood crops. Each group is made up of soils that are suited to the same kinds of trees; that need approximately the same kind of management when the vegetation on them is similar; and that have about the same potential productivity.

Each woodland group is identified by a three-part symbol, such as 1o7, 2w8, or 4c2. The first part of the symbol, always a number, indicates the relative potential productivity of the soils in the group: 1, very high; 2, high; 3, moderately high; 4, moderate; and 5, low. These ratings are based on field determinations of average site index. Site index is the height, in feet, that the dominant trees of a given species, on a specified kind of soil, reach in a natural, unmanaged stand in a stated number of years. For the merchantable hardwoods and softwoods in this county, the site index is the height reached in 50 years, except for cottonwood, for which the index is height reached in 30 years, and sycamore, for which the index is height reached in 35 years.

The five foregoing ratings are based on field determination of average site index of an indicator woodland type or species. Site indexes are grouped into site quality classes, and the classes are used to arrive at approximate expected yields per acre in cords and board feet. On the basis of research studies, site index can be converted into approximate expected growth and yield per acre in board feet. For this county, conversions of average site index into volumetric growth and yield are based on research as follows: loblolly and shortleaf pines, cottonwood, and oaks.

The second element in the symbol indicates the suitability subclass. It expresses selected soil properties that cause moderate to severe hazards or limitations in woodland use or management, by one of the following lowercase Arabic letters:

Subclass x (stoniness or rockiness).—Soils having restrictions or limitations for woodland use or management because of stones or rocks.

Subclass w (excessive wetness).—Soils in which excess water, either seasonally or year long, cause significant limitations for woodland use or management. These soils have restricted drainage, a high water table, or a flooding hazard that adversely affects either development or management of the stand.

Subclass c (clayey soils).—Soils having restrictions or limitations for woodland use or management because of the kind or amount of clay in the upper part of the soil profile.

Subclass r (relief or slope).—Soils having restrictions or limitations for woodland use or management caused only by steepness of slope.

Subclass o (slight or no limitations).—Soils having no significant restrictions or limitations for woodland use or management.

In places some kinds of soil have more than one set of subclass characteristics. Priority in placing each kind of soil into a subclass is in the order that the subclass characteristics are given in the foregoing list.

The third element in the symbol, an Arabic numeral, indicates the degree of hazards or limitations and the general suitability of the soils for certain kinds of trees. The three management problems considered here are the erosion hazard, equipment restrictions, and seedling mortality.

The numerals used are:

1. Soils that have no or only slight limitations and that are best suited to needleleaf trees.
2. Soils that have one or more moderate limitations and are best suited to needleleaf trees.
3. Soils that have one or more severe limitations and are best suited to needleleaf trees.
4. Soils that have no or only slight limitations and are best suited to broadleaf trees.
5. Soils that have one or more moderate limitations and are best suited to broadleaf trees.
6. Soils that have one or more severe limitations and are best suited to broadleaf trees.

[3] W. C. AIKEN, woodland conservationist, Soil Conservation Service, assisted in the preparation of this section.

7. Soils that have no or only slight limitations and are suited to either needleleaf or broadleaf trees.
8. Soils that have one or more moderate limitations and are suited to either needleleaf or broadleaf trees.
9. Soils that have one or more severe limitations and are suited to either needleleaf or broadleaf trees.
10. Soils that are not suitable for producing timber commercially.

TABLE 3.—*Woodland suitability groups, average site indexes, and potential yearly growth per acre of important trees*

Woodland suitability groups, soil symbols, and descriptions	Important trees	Average site index	Potential yearly growth rate per acre
			Board feet (Scribner rule)
Group 1o7: Re, Ts. Nearly level, well-drained, loamy soils on flood plains of streams.	Loblolly pine	100	770
	Slash pine	100	610
	Yellow-poplar	105	550
	Cottonwood	100	590
	Sweetgum	100	450
	Oak	100	450
Group 1w8: Ch. Nearly level, somewhat poorly drained to well drained soils on flood plains.	Loblolly pine	100	770
	Slash pine	100	610
	Cottonwood	100	590
	Sweetgum	100	450
	Sycamore	90	----
	Yellow-poplar	100	500
Group 2w8: At. Nearly level, moderately well drained, loamy soils on terraces of streams.	Loblolly pine	89	600
	Slash pine	89	550
	Sweetgum	90	400
	Bottom-land oak	90	350
	Yellow-poplar	100	500
Group 2w9: Ro. Nearly level, poorly drained, loamy soils on terraces of streams.	Loblolly pine	90	610
	Slash pine	90	570
	Sweetgum	90	400
	Bottom-land oak	90	350
Group 3o7: Ab, AlC, CeC, DgD, GrB, GrC, GvC, HcC, MaB, MdC, MrD. Nearly level to hilly, well-drained, loamy or clayey soils on terraces of streams and on uplands.	Loblolly pine	80	470
	Slash pine	80	430
	Virginia pine	70	370
	Longleaf pine	67	250
	Yellow-poplar	90	410
	Oak	75	----
Group 3r8: MtE. Steep, well-drained, loamy soils on uplands.	Virginia pine	70	370
	Longleaf pine	67	250
	Yellow-poplar	90	410
Group 4o1: TcD. Hilly, well-drained, loamy soils on uplands.	Loblolly pine	70	490
	Shortleaf pine	60	320
	Virginia pine	60	300
	Longleaf pine	60	230
Group 4c2: ImB. Undulating, well drained or moderately well drained, loamy soils on uplands.	Loblolly pine	70	490
	Shortleaf pine	60	320
	Virginia pine	60	300
	Longleaf pine	60	230
Group 4r2: TrE. Steep, well-drained, loamy soils on uplands associated with nearly level, well-drained, loamy soils on narrow flood plains of streams.	Loblolly pine	70	490
	Shortleaf pine	60	320
	Virginia pine	60	300
	Longleaf pine	60	230
Group 4x8: ClE. Steep, well-drained, loamy soils that contain cobblestones, on uplands.	Loblolly pine	70	470
	Slash pine	70	430

Use of the Soils for Wildlife [4]

The soils of Clay County produce food and cover for many kinds of wildlife. Rabbit, squirrel, fox, oppossum, raccoon, skunk, and many kinds of nongame birds are species common throughout the survey area. Bobwhite and dove are numerous in cultivated areas. Deer and wild turkeys find suitable habitat in the large wooded areas.

The feeding habits of wildlife differ. Some species eat insects and other animal foods, some eat only plant foods, and others eat a combination of the two.

A brief summary of the food and habitat needed by the more important wildlife in Clay County is as follows:

Beaver.—Beavers eat only vegetation, mainly bark, roots, and green plants. Their principal tree foods are cottonwood, hornbeam, maple, pine, sweetgum, willow, and the tender bark of alder. Beavers also eat honeysuckle, grasses, corn, weeds, acorns, and the tender shoots of elder. The chief feeding areas are within 150 feet of water.

Bobwhite.—Choice foods for bobwhite are acorns, blackberries, browntop millet, wild black cherries, corn, cowpeas, dewberries, flowering dogwood, annual lespedeza, bicolor lespedeza, oats, pine seeds, common ragweed, soybeans, rye, sweetgum, and tickclover. Bobwhite also eat many insects. The food needs to be close to vegetation that provides shade and protection from predators and from adverse weather.

Deer.—Choice foods for deer are acorns, bahiagrass, clover, chufa, corn, cowpeas, greenbrier, annual lespedeza, bicolor lespedeza, oats, soybeans, and rye. A woodland tract of 500 acres or more generally provides enough cover for deer.

Dove, mourning.—Choice foods for mourning doves are browntop millet, bullgrass, corn, Japanese millet, pine seed, common ragweed, and sweetgum seed. Doves do not eat insects, green leaves, or fruit. They drink water daily.

Rabbit.—Cover, such as a blackberry or plum thicket, is a prime need in a rabbit habitat. Choice foods are clover, winter grasses, and other succulent plants.

Squirrel.—Choice foods for squirrels are acorns, blackgum, black cherries, chinkapins, chufa, corn, flowering dogwood, magnolia, peanuts, pecans, and pine seeds.

Turkey, wild.—Turkeys survive only in large areas, generally those that are 2,000 acres or more in size. They need a daily supply of drinking water and generally roost in large trees over or near water. Choice foods are insects acorns, bahiagrass seed, bullgrass, blackberries, dewberries, browntop millet, chufa, clover leaves, corn, cowpeas, peanuts, flowering dogwood, gallberry, wild grapes, oats, pecans, pine seed, ryegrass forage, and soybeans.

Nongame birds.—The foods of the many kinds of nongame birds in the county vary greatly. Several species eat only insects, a few eat insects and fruits, and several others eat insects, fruits, nuts, and acorns.

Fish.—The principal fish in the county are bluegill, bass, and channel catfish. Choice foods for bluegill are aquatic worms, insects, and insect larvae. Bass feed chiefly on smaller fish and insects. The supply of food depends on the fertility of the water, the nature of soils in the watershed, and to some extent, the characteristics of the soils at the bottom of the pond. Because most of the soils in the county are low in fertility and are acid, fertilizer and lime are needed in most ponds so that enough green, microscopic algae is produced to feed worms that are food for fish.

[4] R. E. Waters, biologist, Soil Conservation Service, assisted in the preparation of this section.

Engineering Uses of the Soils [5]

This section is useful to those who need information about soils used as structural material or as foundation upon which structures are built. Among those who can benefit from this section are planning commissions, town and city managers, land developers, engineers, contractors, and farmers.

Among properties of soils highly important in engineering are permeability, strength, compaction characteristics, soil drainage condition, shrink-swell potential, grain size, plasticity, and soil reaction. Also important are depth to the water table, depth to bedrock, and soil slope. These properties, in varying degrees and combinations, affect construction and maintenance of roads, airports, pipelines, foundations for low buildings, irrigation systems, ponds and small dams, and systems for sewage disposal.

Information in this section can be helpful to those who—

1. Select potential residential, industrial, commercial, and recreational areas.
2. Evaluate alternate routes for roads, highways, pipelines, and underground cables.
3. Seek sources of gravel, sand, or clay.
4. Plan farm drainage systems, ponds, and other structures for controlling water and conserving soil.
5. Correlate performance of structures already built with properties of the kinds of soil on which they are built, for the purpose of predicting performance of structures on the same or similar kinds of soil in other locations.
6. Predict the trafficability of soils for cross-county movement of vehicles and construction equipment.
7. Develop preliminary estimates pertinent to construction in a particular area.

Much of the information in this section is presented in the form of tables. Only the data in table 4 are from actual laboratory tests. Estimates of soil properties significant in engineering are given in table 5, and interpretations of engineering properties are given in table 6. This information, along with the soil map and other parts of this publication, can be used to make interpretations in addition to those given in the tables.

This information, however, does not eliminate need for further investigations at sites selected for engineering works, especially works that involve heavy loads or that require excavations to depths greater than those shown in the tables, generally depths greater than 6 feet. Also, inspection of sites, especially the small ones, is needed because many delineated areas of a given soil

[5] J. C. Bush, agricultural engineer, Soil Conservation Service, assisted in the preparation of this section.

mapping unit may contain small areas of other kinds of soil that have strongly contrasting properties and different suitabilities or limitations for soil engineering.

Some of the terms used in this soil survey have a special meaning to soil scientists and a different meaning to engineers. The Glossary defines many of these terms according to their meaning in soil science.

Engineering classification systems

The two systems most commonly used in classifying samples of soils for engineering are the Unified system (*11*) used by SCS engineers, Department of Defense, and others, and the AASHO system (*3*) adopted by the American Association of State Highway Officials.

In the Unified system, soils are classified according to particle-size distribution, plasticity, liquid limit, and organic-matter content. Soils are grouped in 15 classes. There are eight classes of coarse-grained soils, identified as GM, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes are designated by symbols for both classes; for example, ML–CL.

The AASHO system is used to classify soils according to those properties that affect use in highway construction and maintenance. In this system, a soil is placed in one of seven basic groups ranging from A–1 through A–7 on the basis of grain-size distribution, liquid limit, and plasticity index. In group A–1 are gravelly soils of high bearing strength, or the best soils for subgrade (foundation). At the other extreme, in group A–7, are clay soils that have low strength when wet and are the poorest soils for subgrade. Where laboratory data are available to justify a further breakdown, the A–1, A–2, and A–7 groups are divided as follows: A–1–a, A–1–b, A–2–4, A–2–5, A–2–6, A–2–7, A–7–5, and A–7–6. As additional refinement, the engineering value of a soil material can be indicated by a group index number. Group indexes range from 0 for the best material to 20 or more for the poorest. The AASHO classification for tested soils, with group index numbers in parentheses, is shown in table 4. The estimated classification, without group index numbers, is given in table 5 for all soils mapped in the county.

Engineering test data

Soil samples from selected soil series were tested in accordance with standard procedures to help evaluate the soils for engineering purposes. The data are given in table 4. The samples for each series were from different locations and were taken at a depth of 60 inches or less. The data, therefore, may not be adequate for estimating the properties of soils in deeper cuts. These samples were tested for moisture-density relationships, volume change, grain-size distribution, liquid limit, and plasticity index.

In the moisture density, or compaction test, a sample of the soil material is compacted several times with a constant compactive effort, each time at a successively higher moisture content. The density of the compacted material increases as the moisture content increases until the optimum moisture content is reached. After that the density decreases with increases in moisture content. The highest density obtained in the compaction test is termed "maximum dry density." Moisture-density data are important in construction, for as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density when it is at approximately the optimum moisture content.

The results of the mechanical analysis, obtained by combined sieve and hydrometer methods, may be used to determine the relative proportions of the different size particles that make up the soil sample. The percentage of fine-grained material, obtained by the hydrometer method, which generally is used by engineers, should not be used in determining textural classes of soils.

The tests to determine liquid limit and plastic limit measure the effect of water on consistence of the soil material. As the moisture content of a clayey soil increases from a very dry state, the material changes from a semisolid to a plastic state. As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material passes from a semisolid to a plastic state. The liquid limit is the moisture content at which the soil material passes from a plastic to a liquid state. The plasticity index is the numerical difference between liquid limit and plastic limit. It indicates the range in moisture content within which a soil material is in a plastic condition.

Estimated engineering properties

Table 5 lists the soils of the county and the map symbols for each mapping unit and gives estimates of some properties significant in engineering. It also gives the textural classification of the U.S. Department of Agriculture and estimates of the Unified classifications and of the classification used by the American Association of State Highway Officials. In addition, estimates of the grain-size distribution, permeability, available water capacity, reaction, and shrink-swell potential are given. The estimates are based partly on test data in table 4 and on examinations made in the field and partly on experience with soils within the county or with similar soils from adjoining counties. The estimates are based on more than one sample, and some variation from the recorded values can therefore be expected.

More information on the range of properties of the soils can be obtained from the section "Descriptions of the Soils." The depth from the surface shown in table 5 generally is the depth given for horizons of the profiles described in the section "Descriptions of the Soils."

The columns showing depth to bedrock and depth to seasonal high water table are given in feet. The estimates are based on normal field investigations.

In the column showing permeability, the rate at which water moves downward through undisturbed soil material is estimated. The estimates are based on undisturbed cores of saturated soils. This rating should not be confused with the coefficient "K" used by engineers.

The available water capacity, given in inches per inch of soil, refers to the approximate amount of capillary water in the soil when the soil is wet to field capacity. When the soil is air dry, this same amount of water will wet the soil to a depth of 1 inch without deeper percolation.

TABLE 4.—*Engineering*

[Tests performed by Alabama State Highway Department, Montgomery, in accordance

Soil name and location	Parent material	Alabama report No.	Depth from surface	Moisture-density data [1]	
				Maximum dry density	Optimum moisture
Chewacla silt loam:		*S69Ala-14*	*Inches*	*Lb. per cu. ft.*	*Percent*
1¼ miles N. of Lineville, on Doctor Clark's farm, NW¼NW¼ sec. 31, T. 19 S., R. 9 E. (Modal)	Silty alluvium from surrounding uplands.	8-1	0-6	114	13
		8-3	15-35	91	27
		8-4	35-51	93	25
Clymer cobbly fine sandy loam:					
⅜ mile S. of abandoned aircraft guidance site, SW¼NW¼ sec. 24, T. 20 S., R. 5 E. (Modal)	Residuum from the weathering of sandstone.	7-1	0-5	105	15
		7-3	11-28	120	11
Grover sandy loam:					
¼ mile N. of Mount Moriah Church on east roadbank, NE¼NE¼ sec. 29, T. 21 S., R. 8 E. (Modal)	Residuum from the weathering of granite.	1-1	0-7	104	15
		1-3	10-28	107	17
		1-5	39-60	105	19
Madison gravelly sandy loam:					
⅖ mile N. of G.M. Pruitt Dairy Barn, SW¼ SE¼ sec. 27, T. 20 S., R. 8 E. (Modal)	Residuum from the weathering of mica schist.	5-1	0-4	116	12
		5-2	4-21	105	18
		5-4	33-53	101	20
Tatum gravelly loam:		*S68Ala-14*			
2 miles SE. of Corinth Church, NW¼NW¼ sec. 24, T. 21 S., R. 9 E. (Modal)	Residuum from the weathering of slate.	1-2	2-6	94	18
		1-3	6-25	94	18
		1-4	25-42	106	17

[1] Based on AASHO Designation T 99-57, Method A (*3*).

[2] Mechanical analysis according to AASHO Designation T 88-57. Results by this procedure may differ somewhat from results that would have been obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method, and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette

TABLE 5.—*Estimated properties*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soil for referring to other series that appear in the first

Soil series and map symbols	Depth to—		Depth from surface	Classification		
	Bedrock	Seasonal high water table		USDA texture	Unified	AASHO
	Feet	*Feet*	*Inches*			
Abell: Ab	>5	4	0-15	Loam or silt loam	ML	A-4
			15-46	Clay loam or loam	ML	A-4
			46-50	Sandy loam	SM	A-4
Allen: AlC	>6	>6	0-8	Fine sandy loam	ML	A-4
			8-83	Clay loam	CL	A-4 or A-6
Altavista: At	>5	2½	0-6	Loam	SM or ML	A-2 or A-4
			6-53	Sandy clay loam or clay loam.	SM or ML	A-4 or A-6
			53-60	Sandy loam	SM	A-2 or A-4

See footnotes at end of table.

test data

with standard procedures of the American Association of State Highway Officials (AASHO) (*3*)]

Mechanical analysis data [2]							Liquid limit	Plasticity index	Classification	
Percentage passing sieve—						Percentage smaller than 0.005 mm.			AASHO [3]	Unified [4]
2-in.	1-in.	No. 4 (4.7 mm.)	No. 8 (2.38 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)					
							Percent			
100	--------	99	96	87	67	44	36	7	A–4(6)	ML
--------	--------	----------	100	100	98	72	48	13	A–7–5(18)	ML
--------	--------	----------	100	98	93	68	39	8	A–4(11)	ML
--------	100	90	85	65	43	24	29	3	A–4(1)	SM
100	99	79	70	53	38	25	25	4	A–4(0)	SM
100	97	97	96	68	40	24	36	6	A–4(1)	SM
--------	100	99	99	77	58	44	44	11	A–7–5(5)	ML
--------	100	99	98	77	50	36	45	5	A–5(3)	SM
--------	100	90	79	58	29	17	28	2	A–2–4(0)	SM
--------	100	98	91	81	59	46	35	5	A–4(4)	ML
--------	100	99	98	89	58	37	41	4	A–5(4)	ML
--------	100	89	86	81	58	26	34	3	A–4(4)	ML
--------	100	99	98	98	93	64	53	10	A–5(15)	MH
100	89	82	80	75	50	23	39	2	A–4(3)	ML

method and the material coarser than 2 millimeters is excluded from calculations of grain-size fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soil.

[3] Based on AASHO Designation M 145–49.

[4] Based on the Unified Soil Classification System (*11*).

significant in engineering

in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions column of this table. The symbol > means more than]

Mechanical analysis				Permeability [1]	Available water capacity	Reaction	Shrink-swell potential
Percentage less than 3 inches passing sieve—							
No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)				
				Inches per hour	*Inches per inch of soil*	*pH*	
95–100	90–100	70–90	50–75	2. 0–6. 0	0. 12–0. 14	5. 1–5. 5	Low.
98–100	95–100	70–95	60–85	0. 6–2. 0	0. 13–0. 15	4. 5–5. 5	Low.
95–100	85–100	60–75	36–50	2. 0–6. 0	0. 10–0. 12	4. 5–5. 5	Low.
90–100	90–100	80–90	65–70	0. 6–2. 0	0. 15–0. 18	4. 5–5. 5	Low.
90–100	85–100	80–95	65–75	0. 6–2. 0	0. 15–0. 18	4. 5–5. 5	Moderate.
95–100	95–100	80–95	30–55	2. 0–6. 0	0. 11–0. 13	5. 1–6. 0	Low.
98–100	95–100	80–97	40–70	0. 6–2. 0	0. 12–0. 14	5. 1–5. 5	Low.
95–100	90–100	80–100	30–50	2. 0–6. 0	0. 11–0. 13	5. 1–5. 5	Low.

TABLE 5.—*Estimated properties*

Soil series and map symbols	Depth to—		Depth from surface	Classification		
	Bedrock	Seasonal high water table		USDA texture	Unified	AASHO
	Feet	*Feet*	*Inches*			
Cecil: CeC	>6	>10	0–7	Gravelly sandy loam	SM	A–2
			7–32	Clay loam or clay	MH or ML	A–7
			32–56	Clay loam	ML	A–7
*Chewacla [2]: Ch	>6	1½	0–6	Silt loam	ML	A–4
			6–51	Silt loam	ML	A–4 or A–7
For Riverview part, see Riverview series.						
Clymer [2]: ClE	2–3½	>5	0–5	Cobbly fine sandy loam	SM	A–4
			5–28	Sandy clay loam	SM	A–4 or A–2
*Davidson: DgD	>6	>6	0–6	Clay loam	ML	A–4
			6–72	Clay	ML or CL	A–7 or A–4
For Gwinnett part, see Gwinnett series.						
Grover [2]: GrB, GrC, GvC	>6	>6	0–10	Sandy loam	SM	A–4
			10–39	Clay loam or loam	ML	A–7 or A–5
			39–60	Sandy clay loam	SM or ML	A–5
Gwinnett	2–3½	>10	0–5	Clay loam	ML	A–4
			5–30	Clay	ML	A–7
Mapped only with Davidson soils.						
Hiwassee: HcC	>5	>10	0–60	Clay	ML or CL	A–7
*Iredell: ImB	1½–3½	1–2	0–7	Gravelly loam	SM or ML	A–4
			7–29	Clay	CH	A–7
For Mecklenberg part, see Mecklenburg series.						
*Madison: MaB, MdC, MrD, MtE	1½–3½	>10	0–4	Gravelly sandy loam	SM	A–2 or A–4
			4–33	Clay	ML	A–4
			33–53	Schist	ML	A–5 or A–4
For Riverview part of MrD, see Riverview series; for Tallapoosa and Tusquitee parts of MtE, see their respective series.						
Mecklenburg	2–4	>5	0–6	Gravelly loam	ML	A–4
			6–40	Clay	CL	A–7
Mapped only with Iredell soils.						
Riverview: Re	>6	3	0–61	Silt loam or loam	ML, ML–CL, or CL	A–4
			61–65	Fine sandy loam	SM	A–4
Roanoke: Ro	>6	0–½	0–7	Silt loam	ML	A–4
			7–14	Clay loam	ML	A–4 or A–5
			14–65	Clay	MH	A–7
Tallapoosa	⅝–1½	>6	0–4	Gravelly loam	SM	A–4
			4–14	Clay loam	ML	A–4
			14–18	Slaty loam	SM or ML	A–4
Mapped only with Madison and Tatum soils.						
*Tatum: TcD, TrE	1½–3½	>6	2–6	Gravelly loam or loam	ML	A–4 or A–5
			6–25	Clay	MH	A–7 or A–5
			25–42	Slaty silt loam	ML or SM	A–4
For Chewacla part of TcD, see Chewacla series; for Tallapoosa and Riverview parts of TrE, see their respective series.						
Toccoa: Ts	>6	3	0–65	Sandy loam	SM	A–2 or A–4
Tusquitee	3½–5+	>5	0–9	Loam	ML	A–4
			9–48	Clay loam or loam	ML	A–4
Mapped only with Madison soils.						

[1] This rating should not be confused with the coefficient "K" used by engineers.

significant in engineering—Continued

Mechanical analysis				Permeability [1]	Available water capacity	Reaction	Shrink-swell potential
Percentage less than 3 inches passing sieve—							
No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)				
				Inches per hour	*Inches per inch of soil*	*pH*	
90–100	80–100	60–80	20–35	2. 0–6. 0	0. 12–0. 14	5. 6–6. 5	Low.
95–100	90–100	85–95	70–90	0. 6–2. 0	0. 13–0. 15	5. 1–6. 0	Moderate.
95–100	90–100	80–90	50–70	0. 6–2. 0	0. 13–0. 15	5. 1–5. 5	Moderate.
98–100	95–100	85–100	60–90	0. 6–2. 0	0. 13–0. 15	5. 1–6. 0	Low.
100	100	85–100	75–98	0. 6–2. 0	0. 17–0. 19	5. 1–6. 0	Low.
70–95	65–85	55–75	36–50	2. 0–6. 0	0. 10–0. 12	4. 5–5. 5	Low.
70–85	60–80	45–60	30–45	2. 0–6. 0	0. 12–0. 13	4. 5–5. 5	Low.
98–100	98–100	85–95	60–80	0. 6–2. 0	0. 12–0. 14	5. 1–6. 0	Low.
98–100	95–100	85–100	65–85	0. 6–2. 0	0. 12–0. 14	5. 6–6. 5	Moderate.
95–100	90–100	60–75	36–50	2. 0–6. 0	0. 08–0. 10	5. 1–6. 5	Low.
98–100	98–100	70–85	50–70	0. 6–2. 0	0. 12–0. 14	4. 5–5. 5	Moderate.
98–100	95–100	70–80	45–55	0. 6–2. 0	0. 10–0. 14	4. 5–5. 5	Low.
95–100	90–100	75–90	55–75	0. 6–2. 0	0. 12–0. 15	4. 5–5. 5	Low.
98–100	95–100	85–95	60–75	0. 6–2. 0	0. 12–0. 15	4. 5–5. 5	Moderate.
95–100	95–100	85–95	65–85	0. 6–2. 0	0. 12–0. 15	4. 5–5. 5	Moderate.
75–90	70–90	65–80	40–60	2. 0–6. 0	0. 10–0. 12	5. 6–6. 5	Low.
98–100	95–100	85–95	80–90	0. 06–0. 2	0. 12–0. 14	6. 1–6. 5	High.
85–95	70–85	55–75	25–40	2. 0–6. 0	0. 10–0. 12	5. 1–6. 0	Low.
95–100	85–95	70–90	50–70	0. 6–2. 0	0. 12–0. 14	4. 5–5. 5	Moderate.
95–100	85–100	70–90	50–70	----------	----------	4. 5–5. 5	
85–95	75–85	65–75	50–75	2. 0–6. 0	0. 10–0. 12	6. 1–6. 5	Low.
90–100	85–100	80–95	75–90	0. 06–0. 2	0. 12–0. 14	6. 1–6. 5	Moderate.
98–100	95–100	75–95	60–80	0. 6–2. 0	0. 10–0. 15	5. 1–5. 5	Low.
98–100	95–100	80–90	36–50	0. 6–2. 0	0. 10–0. 12	5. 1–5. 5	Low.
98–100	95–100	80–95	60–75	0. 6–2. 0	0. 10–0. 13	4. 5–5. 5	Low.
98–100	95–100	70–90	50–70	0. 06–0. 2	0. 10–0. 12	4. 5–5. 5	Low.
98–100	95–100	70–90	60–80	0. 06–0. 2	0. 10–0. 12	4. 5–5. 5	Moderate.
80–90	70–85	60–75	36–50	2. 0–6. 0	0. 10–0. 12	4. 5–5. 5	Low.
90–100	90–100	75–90	55–75	0. 6–2. 0	0. 10–0. 12	4. 5–5. 5	Low.
60–85	50–70	40–60	36–55	0. 6–2. 0	0. 05–0. 08	4. 5–5. 5	Low.
80–95	70–90	65–85	50–70	2. 0–6. 0	0. 10–0. 12	4. 5–5. 5	Low.
98–100	95–100	90–100	70–95	0. 6–2. 0	0. 12–0. 14	4. 5–5. 5	Moderate.
75–90	70–85	65–80	40–60	0. 6–2. 0	0. 07–0. 09	4. 5–5. 5	Low.
98–100	98–100	85–100	30–50	2. 0–6. 0	0. 07–0. 10	5. 6–6. 5	Low.
90–100	85–95	75–90	55–70	2. 0–6. 0	0. 10–0. 13	5. 1–6. 0	Low.
98–100	95–100	85–100	55–80	0. 6–2. 0	0. 12–0. 15	5. 1–6. 0	Low.

[1] Ratings are from test data by Alabama Highway Department.

TABLE 6.—*Engineering interpretations*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions for referring to other series that appear in the first column of this table]

Soil series and map symbols	Suitability as a source of—		Soil features affecting farm ponds	
	Topsoil	Roadfill	Reservoirs	Embankments
Abell: Ab	Good	Fair: low strength	Excessive permeability	Low strength; piping.
Allen: AlC	Fair: thin layer of suitable material.	Fair: low strength	Excessive permeability	Low strength.
Altavista: At	Fair: too clayey	Good or fair: low strength.	Excessive permeability; wetness.	Features favorable.
Cecil: CeC	Fair: too clayey	Poor: high compressibility.	Excessive permeability	High compressibility low strength.
*Chewacla: Ch For Riverview part, see Riverview series.	Good	Fair: wetness	Excessive permeability; wetness.	Low strength.
Clymer: ClE	Poor: coarse fragments.	Poor: thin layer of suitable material.	Rock depth	Rock depth; stony.
*Davidson: DgD For Gwinnett part, see Gwinnett series.	Fair: too clayey	Fair: low strength	Excessive permeability	Low strength; piping.
Grover:				
GrB	Fair: thin layer of suitable material.	Fair: low strength	Excessive permeability	Low strength; piping.
GrC	Fair: thin layer of suitable material.	Fair: low strength	Excessive permeability	Low strength; piping.
GvC	Fair: thin layer of suitable material.	Fair: low strength	Excessive permeability	Low strength; piping.
Gwinnett Mapped only with Davidson soils.	Fair: too clayey	Poor: thin layer of suitable material.	Excessive permeability	Low strength; piping; rock depth.
Hiwassee: HcC	Fair: too clayey	Poor: low strength	Excessive permeability	Low strength; piping.
*Iredell: ImB For Mecklenburg part, see Mecklenburg series.	Poor: too clayey	Poor: high compressibility.	Rock depth	High compressibility; high shrink-swell potential; rock depth.
*Madison:				
MaB	Fair: too clayey	Fair: low strength	Excessive permeability	Low strength; rock depth; piping.
MdC	Fair: too clayey	Fair: low strength	Excessive permeability	Low strength; rock depth; piping.
MrD	Fair: too clayey	Fair: low strength	Excessive permeability	Low strength; rock depth; piping.
MtE For Riverview part of MrD and Tallapoosa and Tusquitee parts of MtE, see their respective series.	Poor: slope	Poor: slope	Excessive permeability	Low strength; rock depth; piping.
Mecklenburg Mapped only with Iredell soils.	Poor: too clayey	Poor: high compressibility.	Rock depth	Low strength; piping.
Riverview: Re	Good	Fair: low strength	Excessive permeability	Low strength; piping.

TABLE 6.—*Engineering interpretations*—Continued

Soil series and map symbols	Suitability as a source of—		Soil features affecting farm ponds	
	Topsoil	Roadfill	Reservoirs	Embankments
Roanoke: Ro	Poor: wetness	Poor: wetness	Wetness	Low strength; high compressibility.
Tallapoosa. Mapped only with Madison and Tatum soils.	Poor: slope	Poor: thin layer of suitable material.	Rock depth	Rock depth; low strength; piping.
*Tatum: TcD	Poor: too clayey	Poor: low strength	Excessive permeability	Low strength; high compressibility; rock depth.
TrE. For Chewacla part of TcD and Tallapoosa and Riverview parts of TrE, see their respective series.	Poor: too clayey	Poor: low strength	Excessive permeability	Low strength; high compressibility; rock depth.
Toccoa: Ts	Good	Good	Excessive permeability	Features favorable.
Tusquitee. Mapped only with Madison soils.	Fair: thin layer of suitable material.	Fair: low strength	Excessive permeability	Low strength; piping.

Reaction gives the intensity of the acidity or alkalinity of the soil, expressed in pH value. A pH notation of 7.0 is neutral. A lower value indicates acidity, and a higher value indicates alkalinity.

The ratings for shrink-swell potential indicate the volume change resulting from the shrinking of the soil when it dries and the swelling of the soil as it takes in moisture. It is estimated on the basis of the amount and type of clay in the soil series. In general, soils classified as A–7 and CH have a high shrink-swell potential. Clean sands and gravels are those having a small amount of nonplastic to slightly plastic fines that have a low shrink-swell potential, as does most other nonplastic to slightly plastic soil material.

Engineering interpretations

Table 6 lists suitability ratings for the soils of the county as a source of topsoil and roadfill and gives features that affect work on reservoirs and embankments of farm ponds. These features generally are not apparent to the engineer unless he has access to the results of a field investigation. They are, however, significant in construction.

Properties important in rating the suitability of the soil as a source of topsoil are productivity, content of coarse fragments, texture, slope, wetness, and depth of the material at the source of supply. The ratings used are good, fair, and poor. The suitability of the soil material for roadfill depends mainly on the texture.

Suitability ratings for the soils as a source of sand and gravel are not shown in the table. Sources of sand and gravel within the county are limited.

In selecting sites for reservoirs for farm ponds, the underlying subsoil should be investigated for permeability and seepage. The rock formations underlying the soils in Clay County are such that a relatively water-tight embankment foundation can be secured if a core trench is cut into weathered rock and backfilled with impervious material.

In rating materials for embankments for farm ponds, features to be considered are the strength and stability of the soil and its compaction characteristics and permeability. A thorough investigation of the site is necessary, so that the soils available in the area can be used effectively and a stable, impervious structure can be made.

Town and Country Planning

This section was prepared chiefly for planners, developers, builders, zoning officials, realtors, private and potential landowners, and others interested in the use of the soils of Clay County for town and country planning. Many areas once used for farming are gradually being converted to other uses, such as housing developments, schools, parks, and recreational developments.

In selecting a site for a home, an industry, recreational use, or other purpose, the limitations of the soils in each site for such use need to be determined. Some of the more common properties affecting the use of the soils for town and country planning are soil texture, reaction, and depth, shrink-swell potential, slope, permeability, depth to hard rock and to the water table, and hazard of flooding. On the basis of these and related characteristics, soil scientists and engineers have rated the soils of Clay County for specific purposes. The ratings, and the nature of the soil limitations that influenced the ratings, are shown in table 7. These ratings are predictions based on test results, research, and experience of users.

TABLE 7.—*Degree of limitation for selected town and*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil. The soils for referring to other series that appear

Soil series and map symbols	Local roads and streets	Septic tank filter fields	Sanitary land fills [1]	Sewage lagoons
Abell: Ab	Severe: flooding	Severe: flooding	Severe: wetness	Moderate: wetness
Allen: AlC	Moderate: low strength	Moderate: restricted permeability.	Slight	Severe: slope
Altavista: At	Severe: flooding	Severe: flooding	Severe: wetness	Severe: wetness
Cecil: CeC	Severe: high compressibility.	Moderate: restricted permeability.	Slight	Moderate: excessive permeability.
*Chewacla: Ch For Riverview part, see Riverview series.	Severe: flooding	Severe: wetness	Severe: wetness	Severe: wetness
Clymer: ClE	Severe: slope	Severe: slope	Severe: depth to rock	Severe: depth to rock
*Davidson: DgD For ratings of Gwinnett soils in DgD, see the Gwinnett series.	Moderate: slope; low strength.	Moderate: restricted permeability.	Severe: too clayey	Severe: slope
Grover:				
GrB	Moderate: low strength	Moderate: restricted permeability.	Slight	Moderate: excessive permeability.
GrC	Moderate: low strength	Moderate: restricted permeability.	Slight	Severe: slope
GvC	Moderate: low strength	Moderate: restricted permeability.	Slight	Severe: slope
Gwinnett Mapped only in an association with Davidson soils.	Severe: low strength	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock
Hiwassee: HcC	Severe: low strength	Moderate: restricted permeability.	Severe: too clayey	Severe: slope
*Iredell: ImB For ratings of Mecklenburg soils in ImB, see the Mecklenburg series.	Severe: high compressibility.	Severe: restricted permeability.	Severe: wetness	Severe: wetness
*Madison:				
MaB	Moderate: low strength	Severe: depth to rock	Severe: too clayey	Severe: depth to rock
MdC	Moderate: low strength	Severe: depth to rock	Severe: too clayey	Severe: depth to rock
MrD	Moderate: low strength	Severe: depth to rock	Severe: too clayey	Severe: depth to rock
MtE For ratings of the Riverview soils in MrD and the Tallapoosa and Tusquitee soils in MtE, refer to their respective series.	Severe: slope	Severe: depth to rock	Severe: too clayey	Severe: depth to rock
Mecklenburg Mapped only with Iredell soils.	Severe: high compressibility.	Severe: restricted permeability.	Severe: too clayey	Severe: depth to rock
Riverview: Re	Severe: flooding	Severe: flooding	Severe: wetness	Severe: wetness

See footnote at end of table.

country planning uses and the chief limiting properties

in such mapping units may have different properties and limitations, and for this reason it is necessary to follow carefully the instructions in the first column of this table]

Foundations for low buildings	Camp areas	Picnic areas	Playgrounds	Paths and trails
Severe: flooding	Severe: flooding	Slight	Moderate: flooding	Slight.
Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Slight.
Severe: flooding	Moderate: wetness	Moderate: flooding	Moderate: wetness	Slight.
Moderate: slope	Slight	Slight	Severe: slope	Slight.
Severe: flooding	Severe: flooding	Severe: flooding	Severe: wetness	Moderate: wetness.
Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope.
Moderate: slope	Moderate: too clayey	Moderate: too clayey	Severe: slope	Moderate: slope.
Moderate: expansive	Slight	Slight	Moderate: slope	Slight.
Moderate: expansive	Slight	Slight	Severe: slope	Slight.
Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Slight.
Moderate: slope	Severe: slope	Severe: slope	Severe: slope	Moderate: slope.
Moderate: expansive	Severe: too clayey	Severe: too clayey	Severe: slope	Severe: too clayey.
Severe: expansive	Moderate: restricted permeability.	Moderate: wetness	Moderate: wetness	Moderate: wetness.
Moderate: expansive	Slight	Slight	Moderate: slope	Slight.
Moderate: expansive	Slight	Slight	Severe: slope	Slight.
Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Slight.
Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope.
Moderate: expansive	Moderate: restricted permeability.	Slight	Moderate: restricted permeability.	Slight.
Severe: flooding	Moderate: flooding	Moderate: flooding	Moderate: flooding	Moderate: flooding.

TABLE 7.—*Degree of limitation for selected town and*

Soil series and map symbols	Local roads and streets	Septic tank filter fields	Sanitary land fills [1]	Sewage lagoons
Roanoke: Ro	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness
Tallapoosa Mapped only with Madison and Tatum soils.	Moderate: slope	Severe: depth to rock	Severe: depth to rock	Severe: depth to rock
*Tatum: TcD TrE For ratings of the Chewacla soils in TcD and the Riverview and Tallapoosa soils in TrE, refer to their respective series.	Severe: low strength Severe: slope	Severe: depth to rock Severe: depth to rock	Severe: depth to rock Severe: depth to rock	Severe: depth to rock Severe: depth to rock
Toccoa: Ts	Severe: flooding	Severe: flooding	Severe: wetness	Severe: wetness
Tusquitee Mapped only with Madison soils.	Moderate: low strength	Moderate: restricted permeability.	Severe: depth to rock	Severe: slope

[1] Onsite studies of the underlying strata, water table, and hazards of aquifer pollution and drainage into ground water need to be made

The ratings used are slight, moderate, and severe, and they are applied as the soils occur naturally. A rating of slight means the soils have properties favorable for the rated use. Limitations are so minor that they can be easily overcome. Good performance and low maintenance can be expected from these soils. A rating of moderate means the soils have properties moderately favorable for the rated use. Limitations can be overcome or modified with planning design or special maintenance. A rating of severe means the soils have one or more properties unfavorable for the rated use. Limitations are difficult and costly to modify or overcome, requiring major soil reclamation, special design, or intense maintenance.

In the paragraphs that follow, each specific use is defined and the properties important in rating the limitations of the soils for such use are given. The information can be used, along with table 7, with information in other parts of the survey and with the soil map at the back of the survey, as a guide in planning the use of the soils for town and country planning. Before beginning most construction projects, however, an investigation should be made at the site being considered.

Local roads and streets.—These areas are used for construction and maintenance of improved local roads or streets that have all-weather surfacing, commonly of asphalt or concrete, and that are expected to carry automobile traffic all year. The roads and streets consist of (1) underlying local soil material, whether cut or fill, that is called the subgrade; (2) the base material of gravel, crushed rock, lime-stabilized soil, or soil-cement-stabilized soil; and (3) the actual road surface or street pavement that is either flexible (asphalt), rigid (concrete), or, in some rural areas, gravel with binder in it. These roads and streets also are graded to shed water, and conventional drainage measures are provided.

Soil properties important in rating the soils for this use are soil drainage, hazard of flooding, slope, depth to bedrock, classification of subgrade soil material, shrink-swell potential, stoniness, and rockiness.

Septic tank filter fields.—Septic tank filter fields are the subsurface tile systems that distribute effluent from a septic tank into the natural soil (*12*). The tile system is laid at least 18 inches deep. Soil properties most important in rating soils for this use are permeability, depth to water table, percolation rate, depth to rock, flooding hazard, and slope.

Sanitary land fills.—A sanitary land fill is an area used to dispose of household trash and garbage by burying it in the soil. The soil properties most important in constructing and operating such a system are depth to hard rock, depth to seasonal high water table, slope, dominant texture of soil profile, stoniness, and flooding hazard.

Sewage lagoons.—A sewage lagoon is a shallow pond constructed to hold sewage within a depth of 2 to 5 feet for the time required for the bacterial decomposition of solids. The lagoon consists of a nearly level floor and an embankment or dike that forms the sides of the pond. The soil properties most important in rating the soils for this use are permeability; depth to bedrock; slope; reservoir site material (Unified grouping); content of coarse fragments under 6 inches in diameter, by volume; percent of surface area covered by coarse fragments over 6 inches in diameter; and organic-matter content.

Foundations for low buildings.—These structures are used for residences, stores, offices, and small industries. They are not more than three stories high. Soil properties important in rating the soils for this use are wetness,

country planning uses and the chief limiting properties—Continued

Foundations for low buildings	Camp areas	Picnic areas	Playgrounds	Paths and trails
Severe: wetness Severe: slope	Severe: wetness Severe: slope	Severe: wetness Severe: slope	Severe: wetness Severe: slope	Severe: wetness. Severe: slope.
Moderate: slope Severe: slope	Moderate: slope Severe: slope	Moderate: slope Severe: slope	Severe: slope Severe: slope	Slight. Moderate: slope.
Severe: flooding Severe: slope	Severe: flooding Moderate: slope	Moderate: flooding Moderate: slope	Moderate: flooding Severe: slope	Moderate: flooding. Moderate: slope.

for land fills deeper than 5 or 6 feet.

hazard of flooding, bearing strength, shrink-swell potential, slope, depth to bedrock, stoniness, rockiness, and corrosivity of uncoated steel. Sewage disposal facilities are not considered in the rating.

Camp areas.—These areas are to be used intensively for tents and small camp trailers and the accompanying activities of outdoor living. Little site preparation is normally required other than shaping and leveling for tent and parking areas. These areas are subject to heavy foot traffic and limited vehicular traffic. Soil properties important in rating the soils for camp areas are wetness, risk of flooding, permeability, slope, surface soil texture, coarse fragments on the surface, stoniness, and rockiness.

Picnic areas.—This land use consists of park-type picnic areas. These areas are subject to heavy foot traffic, but most vehicular traffic is confined to access roads. Preparation of an area consists of leveling sites for tables and fireplaces and building access roads. Soil properties important in affecting this use are wetness, hazard of flooding, slope, texture of surface soil, coarse fragments on the surface, stoniness, and rockiness.

Playgrounds.—These areas are used intensively for play, such as for baseball, football, badminton, and other organized games. These areas are subject to intensive foot traffic. Properties that affect the use of the soil for playgrounds are wetness, risk of flooding, permeability, slope, texture of surface soil, depth to bedrock, coarse fragments on the surface, stoniess, and rockiness.

Paths and trails.—This use applies to soils to be used for local and cross-county foot paths and trails and for bridle paths. Soil properties important in rating this use are wetness, hazard of flooding, slope, texture of surface soil, coarse fragments on the surface, and rockiness or stoniness.

Formation and Classification of the Soils

This section tells how the factors of soil formation affected the development of the soils in Clay County. Then the current system of soil classification is explained, and the soil series are placed in higher categories. The soil series in the county, including a profile representative of each series, are described in the section "Descriptions of the Soils."

Factors of Soil Formation

Soil is produced when parent material, climate, relief, and plants and animals interact for a period of time. These factors, including time, determine the nature of the soil that forms at any point on the earth. All of these factors affect the formation of each soil, but the relative importance of each factor differs from place to place. In some areas one factor may dominate in the formation of a soil and determine most of its properties, as is common where the parent material consists of pure quartz sand. Quartz sand is highly resistant to weathering, and soils formed in it generally have faint horizons. Even in quartz sand, however, a distinct profile can be formed under certain types of vegetation if the relief is low and flat and if the water table is high. The five factors of soil formation are discussed in the paragraphs that follow.

Parent material

Parent material is the unconsolidated mass from which soil forms. It is largely responsible for the chemical and

mineralogical composition of a soil. Most of the soils in Clay County formed in residual material. This is material weathered from the underlying rock.

According to the Alabama Geological Survey (*1*), Ashland mica schist and gneiss underlies about 46 percent of the county, and Talladega phyllite or slate, plus an altered phase, underlies about 42 percent of the county. The rest of the county is underlain by Hillabee schist (7 percent), granite (4 percent), and basic igneous rocks (1 percent).

Most of the soils have a high content of clay. The Madison soils weathered from material that contains considerable muscovite, which is resistant to weathering and is retained in the soil. The Cecil, Davidson, and Grover soils formed in parent material less resistant to weathering, chiefly from feldspars.

Climate

Climate affects the formation of soils through its influence on the rate of weathering of rocks and on the decomposition of minerals and organic matter. It also affects biological activity in the soils and the leaching and movement of weathered materials.

Clay County has a moist, temperate climate with an average annual temperature of about 62° F. The temperature in January averages about 45°, and that in July averages about 79°. The warm, moist climate promotes rapid weathering of hard rock. Consequently, in much of the area, the soils are 2 to 6 feet thick over a thick layer of loose, disintegrated, weathered rock, which blankets the hard rock underlying the county. About 52.5 inches of water falls annually, and much of this percolates through the soil and moves dissolved or suspended materials downward so that the soils generally are low in bases. Plant remains decay rapidly and produce organic acids that help to hasten the breakdown of minerals in the underlying rock. The content of organic matter in the surface layer of soils that have good drainage is therefore quite low.

Relief

Relief influences soil formation through its effect on runoff, movement of water within the soil, plant cover, and to some extent, soil temperature.

The length, shape, steepness, and exposure of slopes hastens or delays the rate of runoff. Runoff is more rapid on steep soils than on level ones, and steep soils, therefore, are eroded more rapidly than level ones, even if both are of the same material. In Clay County, for example, steep soils underlain by rock generally are thinner than soils that formed in similar material on broad, nearly level ridgetops. Rock outcrops also are more numerous.

A level or nearly level surface allows more time for water to penetrate the soil. More water thus percolates through the soil profile, and this in turn influences the solution and translocation of soluble materials. The moisture available in the soil also determines to a significant extent the amount and kinds of plants that grow. Steep soils, therefore, that have a slowly permeable surface are generally drier than level or nearly level soils, and less vegetation grows on them.

Clay County ranges from nearly level to steep, but it is generally hilly. The effect of relief on soil temperature, therefore, is not so pronounced as in more mountainous areas. In general, however, slopes that face south are warmer than slopes that face north.

Plants and Animals

Plants, animals, bacteria, and other organisms are active in the soil-forming processes. The changes they bring about depend mainly on the kinds of life processes peculiar to each. The kinds of plants and animals that live on and in the soil are affected, in turn, by the climate, the parent material, relief, and age of the soil.

Most of the soils in Clay County formed under forest consisting of various kinds of hardwoods and of such softwoods as pines. These plants supply most of the organic matter available in the soils, though the hardwoods contribute more than the softwoods. The content of organic matter in most of the soils is low to medium.

Growing plants provide a cover that helps to reduce erosion and stabilize the surface so that the soil-forming processes can continue. Leaves, twigs, roots, and entire plants accumulate on the surface of forest soils and then decompose as the result of the action of percolating water and of micro-organisms, earthworms, and other forms of life. The roots of plants widen cracks in the rocks, permitting the entrance of more water. Also, the uprooting of trees by wind decidedly influences formation of soils through mixing of soil layers and loosening of underlying material.

Small animals, earthworms, insects, and micro-organisms also influence the formation of soils by mixing organic matter into the soil and by helping to break down the remains of plants. Small animals burrow into the soil and thus mix the layers. Earthworms and other small invertebrates feed on the organic matter in the upper few inches. They slowly but continually mix the soil material and may alter it chemically. Bacteria, fungi, and other microorganisms hasten the weathering of rocks and the decomposition of organic matter.

Time

Generally a long time is required for soil to form (*6*). Most of the soils on uplands in Clay County have been in place long enough for distinct horizons to develop, but some that formed in alluvium have been in place too short a time for distinct horizons to form.

Most soils in Clay County have distinct horizons. The surface soil contains an accumulation of organic matter, and silicate clay minerals have formed and moved downward to produce horizons that are relatively high in clay. Also in such soils oxidation or reduction of iron has had its effect, depending on natural drainage. Many of the soils have been well enough drained that they have a red or dark-red subsoil and contain highly oxidized iron. A few have had impaired drainage and, consequently, have a gray subsoil that contains reduced iron. In addition, leaching of soluble calcium, magnesium, potassium, and other weatherable products has caused a resulting increase in exchangeable hydrogen. Cecil, Davidson, and Madison soils are examples of soils in Clay County that are old.

Two soils that have essentially the same parent material and drainage sometimes differ in degree of profile de-

velopment, chiefly because of time. Examples of these are the Altavista soils on stream terraces and the Riverview soils on flood plains. These soils are similar in texture and occupy similar position on the landscape. The Altavista soils, however, have been in place long enough to have a distinct surface layer and a subsoil that has an accumulation of clay. The Riverview soils, on the other hand, have not been in place long enough for distinct horizons to form and much clay to accumulate.

Classification of the Soils

Two systems of classifying soils have been used in the United States in recent years. The older system was adopted in 1938 (*6*) and later revised (*5*). The system currently used was adopted for general use by the National Cooperative Soil Survey in 1965 and supplemented in March 1967 and September 1968 (*8*). This system is under continual study, and readers interested in the development of the system should refer to the available literature (*4, 10*).

Table 8 shows the classification of each of the soil series represented in Clay County according to the current system. This system defines classes in terms of observable or measurable properties of soils. The properties chosen are primarily those that permit the grouping of soils that are similar in genesis. The classification is designed to encompass all soils. It has six categories. Beginning with the most inclusive, they are the order, suborder, great group, subgroup, family, and series. These are briefly defined in the following paragraphs.

ORDER.—Ten soil orders are recognized in the current system. They are Entisols, Vertisols, Inceptisols, Aridisols, Mollisols, Spodosols, Alfisols, Ultisols, Oxisols, and Histosols. The properties used to differentiate the soil orders are those that tend to give broad climatic groupings of soils. Two exceptions, Entisols and Histosols, occur in many different climates. The four soil orders represented in Clay County are Alfisols, Entisols, Inceptisols, and Ultisols.

Alfisols are soils containing a clay-enriched B horizon that has high base saturation.

Entisols are young mineral soils that do not have genetic horizons or have only the beginning of such horizons.

Inceptisols are mineral soils in which horizons have definitely started to develop. They generally are on young, but not recent, land surfaces.

Ultisols are mineral soils that have distinct horizons and are commonly on old land surfaces. They contain a clay-enriched B horizon that has low base saturation. The base saturation decreases with increasing depth.

SUBORDER.— Each order is subdivided into suborders, primarily on the basis of soil characteristics that seem to produce classes having the greatest genetic similarity. The suborders have a narrower climatic range than the others. The criteria for suborders chiefly reflect the presence or absence of waterlogging or soil differences resulting from the climate or vegetation.

GREAT GROUP.—Each suborder is divided into great groups according to the presence or absence of genetic horizons and the arrangement of these horizons.

SUBGROUP.—Each great group is subdivided into subgroups. One of these subgroups represents the central, or typic, segment of the great group, and the others, called intergrades, contain those soils having properties mostly of the one great group, but also one or more properties of soils in another great group, suborder, or order.

FAMILY.—Each subgroup is divided into families, primarily on the basis of properties important to the growth of plants. Among the properties considered are texture, mineralogy, reaction, soil temperature, permeability, consistence, and thickness of horizons.

SERIES.—The series consists of a group of soils that formed in a particular kind of parent material and that have genetic horizons that, except for texture of the surface soil, are similiar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, structure, reaction, consistence, and mineralogical and chemical composition.

TABLE 8.—*Classification of soil series by higher categories*

Series	Family	Subgroup	Order
Abell	Fine-loamy, mixed, thermic	Typic Hapludults	Ultisols.
Allen	Fine-loamy, siliceous, thermic	Typic Paleudults	Ultisols.
Altavista	Fine-loamy, mixed, thermic	Aquic Hapludults	Ultisols.
Cecil	Clayey, kaolinitic, thermic	Typic Hapludults	Ultisols.
Chewacla	Fine-loamy, mixed, thermic	Fluvaquentic Dystrochrepts	Inceptisols.
Clymer	Fine-loamy, mixed, mesic	Typic Hapludults	Ultisols.
Davidson	Clayey, kaolinitic, thermic (oxidic)	Rhodic Paleudults	Ultisols.
Grover	Fine-loamy, micaceous, thermic	Typic Hapludults	Ultisols.
Gwinnett	Clayey, kaolinitic, thermic	Typic Rhodudults	Ultisols.
Hiwassee	Clayey, kaolinitic, thermic (oxidic)	Typic Rhodudults	Ultisols.
Iredell	Fine, montmorillonitic, thermic	Typic Hapludalfs	Alfisols.
Madison	Clayey, kaolinitic, thermic	Typic Hapludults	Ultisols.
Mecklenburg	Fine, mixed, thermic	Ultic Hapludalfs	Alfisols.
Riverview	Fine-loamy, mixed, thermic	Fluventic Dystrochrepts	Inceptisols.
Roanoke	Clayey, mixed, thermic	Typic Ochraquults	Ultisols.
Tallapoosa	Loamy, micaceous, thermic, shallow	Ochreptic Hapludults	Ultisols.
Tatum	Clayey, mixed, thermic	Typic Hapludults	Ultisols.
Toccoa	Coarse-loamy, mixed, nonacid, thermic	Typic Udifluvents	Entisols.
Tusquitee	Fine-loamy, mixed, mesic	Humic Hapludults	Ultisols.

Climate [6]

The climate of Clay County is temperate, and rainfall generally is well distributed throughout the year. Except in summer, the day-to-day weather is controlled largely by the flow of pressure systems and contrasting air masses across the southern part of the country. In summer the climate borders on the subtropical, as moist tropical air prevails along with a weak, permanent high pressure system.

Spring is the most changeable season. It is characterized by a large range in temperature and rainfall that is variable as to time and amount. The unpredictable weather in spring makes it difficult to plan farm operations with any certainty. In March, wintry weather persists and days are cold, rainy, and windy, but the approach of May brings sunny, warm, and pleasant days. Although freezing temperatures may occur as late as mid-April, daytime temperatures reach into the 90's in May. March is the wettest month of the year, but rainfall decreases in April and May. Dry spells commonly occur in May, but moisture generally is adequate for plant growth, and the dryness is beneficial to cultivation and needed farm operations. Severe thunderstorms and occasional tornadoes are likely in spring. Table 9 gives temperature and precipitation data that are fairly representative of Clay County.

Summer is long. Warm to hot weather begins in May or June and continues into September and often well into October. Breaks in the hot weather are few during July and August. One day is distinguished from another only by the frequency of afternoon thundershowers. Thundershowers provide most of the rainfall in summer and occur on an average of about 1 day in 3, but there are large variations in local rainfall. Rainfall in July is essential for most crops to make maximum growth, and July is the most dependable of the summer months for rain. Temperatures of 90°F. or more occur on most summer days, and the total occurrence for season is about 70 days with a maximum of 90° or more. High temperatures of 100° or more are likely during many of the summers and generally occur during extended periods of dry weather when the effects of heat are most harmful to crops.

Fall is a season of transition when the hot, humid weather early in September gradually gives way to mild, sunny, and generally dry days of October. Rainfall is light and infrequent, skies are clear, humidity is low, and temperature extremes are rare. Extended periods without rain occur frequently and result in occasional mild droughts. The dry weather favors the harvesting of crops, which is at a maximum during this season. At times, lack of moisture hinders the germination and growth of small grain crops. Prewinter cold spells begin late in October and become more frequent in November. Table 10 gives the probabilities of the occurrence of the first low temperatures in fall and the last low temperatures in spring.

In winter there are frequent shifts and interactions between mild air that has been warmed and moistened by travel over the Gulf of Mexico and cold, dry air from the north. As a result, winter is characterized by considerable cloudiness and precipitation that is mainly in the form of rain. Snow is infrequent. Measurable rain can be expected on the average of 1 out of 3 days, and cloudy skies often prevail for several consecutive days. Temperatures of 32° or less occur about 60 times each year, and half of these are in December and January. Severe cold that brings

[6] By C. C. Wooden, climatologist for Alabama, National Weather Service, U.S. Department of Commerce.

TABLE 9.—*Temperature and precipitation data*

[Based on data for Talladega in Talladega County and Rock Mills in Randolph County]

Month	Temperature				Precipitation			
	Average daily maximum	Average daily minimum	Two years in 10 will have at least 4 days with—		Average total	One year in 10 will have—		Average snowfall
			Maximum temperature equal to or higher than—	Minimum temperature equal to or lower than—		Less than—	More than—	
	°F.	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*	*Inches*
January	57	34	72	17	4.8	2.2	8.8	0.5
February	61	36	75	20	5.3	2.4	9.7	.1
March	67	41	81	26	6.5	3.6	9.1	.1
April	76	49	87	33	5.0	1.9	8.8	0
May	84	56	93	44	3.5	1.0	6.1	0
June	90	64	98	55	4.3	1.8	6.8	0
July	91	67	99	62	5.0	2.1	9.1	0
August	91	66	98	59	4.1	1.5	7.4	0
September	86	60	96	50	3.5	.8	6.4	0
October	77	49	89	32	2.0	.2	4.3	0
November	66	39	78	24	3.7	.8	7.2	[1]
December	57	33	71	18	4.8	2.1	8.1	.1
Year	75	50	[2] 100	[3] 10	52.5	44.6	66.2	.8

[1] Trace.

[2] Average annual highest temperature.

[3] Average annual lowest temperature.

TABLE 10.—*Probabilities of last low temperature in spring and first low temperature in fall*

[Based on data for Talladega, Talladega County, Alabama, 1931–1960]

Probability	Dates for given probability and temperature						
	16° F. or less	20° F. or less	24° F. or less	28° F. or less	32° F. or less	36° F. or less	40° F. or less
Spring:							
1 year in 10 later than	Feb. 14	Mar. 3	Mar. 23	Apr. 6	Apr. 12	Apr. 20	May 12
1 year in 4 later than	Feb. 1	Feb. 22	Mar. 12	Mar. 31	Apr. 8	Apr. 15	May 4
1 year in 3 later than	Jan. 29	Feb. 17	Mar. 7	Mar. 23	Apr. 5	Apr. 9	May 3
2 years in 3 later than	Jan. 16	Jan. 30	Feb. 20	Mar. 11	Mar. 24	Apr. 8	Apr. 15
3 years in 4 later than	Jan. 15	Jan. 26	Feb. 18	Mar. 7	Mar. 23	Apr. 4	Apr. 13
9 years in 10 later than	Jan. 12	Jan. 13	Feb. 2	Feb. 23	Mar. 9	Mar. 29	Apr. 4
Fall:							
1 year in 10 earlier than	Dec. 3	Dec. 4	Nov. 20	Nov. 4	Oct. 4	Oct. 18	Oct. 9
1 year in 4 earlier than	Dec. 20	Dec. 10	Nov. 26	Nov. 11	Oct. 31	Oct. 24	Oct. 16
1 year in 3 earlier than	Dec. 22	Dec. 13	Nov. 29	Nov. 13	Nov. 5	Oct. 26	Oct. 17
2 years in 3 earlier than	Dec. 24	Dec. 20	Dec. 6	Nov. 25	Nov. 12	Nov. 4	Oct. 26
3 years in 4 earlier than	Dec. 25	Dec. 22	Dec. 9	Nov. 28	Nov. 15	Nov. 6	Oct. 28
9 years in 10 earlier than	Dec. 30	Dec. 29	Dec. 28	Dec. 3	Nov. 26	Nov. 14	Nov. 3

temperatures of 15° or less seldom occurs and then only for a day or two.

Prevailing winds vary with locale but are generally northerly in winter, southerly in spring and summer, and northeasterly in fall. Average relative humidity for the year is slightly above 70 percent, but there are large variations during the day.

Rainfall is the most important element of weather affecting crop yields. In most years the amount and timeliness of rain is adequate for crops, but wet and dry spells of varying intensity do occur. A mild drought that could affect crop yields slightly but not cause a total failure is likely for at least 1 month on an average of 2 out of 3 years. Severe droughts that could result in total crop failure are rare and not likely more than 1 year out of 15.

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Glossary

Acidity, soil. See Reaction, soil.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates such as crumbs, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity (also termed available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of clay on the surface of a soil aggregate. Synonyms: clay coat, clay skin.

Colluvium. Soil material, rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Drainage class (natural). Refers to the conditions of frequency and duration of periods of saturation or partial saturation that existed during the development of the soil, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Erosion. The wearing away of the land surface by wind (sandblast), running water, and other geological agents.

Flood plain. Nearly level land, consisting of stream sediments, that borders a stream and is subject to flooding unless protected artificially.

Gleization. The reduction, translocation, and segregation of soil compounds, notably of iron, usually in the lower horizons, as a result of water-logging with poor aeration and drainage; expressed in the soil by mottled colors dominated by gray. The soil-forming processes leading to the development of a gley soil.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.—The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these, (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon but may be immediately beneath an A or B horizon.

Mottling, soil. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of drainage. Descriptive terms are as follows: Abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are these: *fine,* less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium,* ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse,* more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Munsell notation. A system for designating color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with a hue of 10YR, a value of 6, and a chroma of 4.

Permeability. The quality that enables the soil to transmit water or air. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

	pH		*pH*
Extremely acid	Below 4.5	Neutral	6.6 to 7.3
Very strongly acid	4.5 to 5.0	Mildly alkaline	7.4 to 7.8
Strongly acid	5.1 to 5.5	Moderately alkaline	7.9 to 8.4
Medium acid	5.6 to 6.0	Strongly alkaline	8.5 to 9.0
Slightly acid	6.1 to 6.5	Very strongly alkaline	9.1 and higher

Sand. Individual rock or mineral fragments in a soil that range in diameter from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Silt. Individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

Soil. A natural, three-dimensional body on the earth's surface that supports plants and that has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tillage of a soil below normal depth ordinarily to shatter a hardpan or claypan.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it may soak into the soil or flow slowly to a prepared outlet without harm. Terraces in fields are generally built so they can be farmed. Terraces intended mainly for drainage have a deep channel that is maintained in permanent sod.

Terrace (geological). An old alluvial plain, ordinarily flat or undulating, bordering a river, lake, or the sea. Stream terraces are frequently called second bottoms, as contrasted to flood plains, and are seldom subject to overflow. Marine terraces were deposited by the sea and are generally wide.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil in relation to the growth of plants, especially soil structure. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable, granular structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Topsoil. A presumed fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

GUIDE TO MAPPING UNITS

For a full description of a mapping unit, read both the description of the mapping unit and that of the soil series to which it belongs. In referring to a capability unit or woodland group, read the introduction to the section it is in for general information about its management. For facts about wildlife, see the section on page 30. Other information is given in tables as follows:

Acreage and extent, table 1, p. 7.
Estimated yields, table 2, p. 27.
Woodland suitability groups, table 3, p. 29.
Use of the soils for engineering, tables 4, 5, and 6, pp. 32 through 37.

Map symbol	Mapping unit	Described on page	Capability unit	Woodland suitability group
			Symbol	Number
Ab	Abell loam	7	I-31	3o7
AlC	Allen association, rolling	8	IIIe-31	3o7
At	Altavista complex	9	IIw-31	2w8
CeC	Cecil association, rolling	10	IIIe-31	3o7
Ch	Chewacla-Riverview complex	11	IIIw-32	1w8
ClE	Clymer association, steep	12	VIIe-32	4x8
DgD	Davidson-Gwinnett association, hilly	13	IVe-31	3o7
GrB	Grover sandy loam, 2 to 6 percent slopes	15	IIe-31	3o7
GrC	Grover sandy loam, 6 to 10 percent slopes	15	IIIe-31	3o7
GvC	Grover association, rolling	15	IVe-31	3o7
HcC	Hiwassee clay, 6 to 10 percent slopes	17	IVe-31	3o7
ImB	Iredell-Mecklenburg association, undulating	18	IIIe-31	4c2
MaB	Madison loam, 2 to 6 percent slopes	18	IIe-31	3o7
MdC	Madison gravelly sandy loam, 6 to 10 percent slopes	19	IIIe-31	3o7
MrD	Madison-Riverview association, hilly	19	IVe-31	3o7
MtE	Madison-Tallapoosa-Tusquitee association, steep	20	VIe-31	3r8
Re	Riverview silt loam	21	IIw-32	1o7
Ro	Roanoke silt loam	22	IVw-31	2w9
TcD	Tatum-Chewacla association, hilly	23	IVe-31	4o1
TrE	Tatum-Tallapoosa-Riverview association, steep	24	VIe-31	4r2
Ts	Toccoa sandy loam	25	IIw-32	1o7

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FOREST SERVICE

ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES
ALABAMA AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

CLAY COUNTY, ALABAMA

Scale 1:190,080
1 0 1 2 3 4 Miles

SOIL ASSOCIATIONS

SOILS OF THE MOUNTAINS AND VALLEYS

1. Clymer association: steep, stony soils on mountains; loamy surface layer and subsoil, and hard rock at depths of 24 to 40 inches
2. Madison-Tallapoosa-Tusquitee association: steep soils on mountains and in coves; loamy surface layer, clayey and loamy subsoil, and rock at depths of 10 to 40 inches
3. Tatum-Tallapoosa association: steep soils on mountains; loamy surface layer, clayey and loamy subsoil, and rock at depths of 10 to 40 inches
4. Allen association: undulating to rolling soils on foot slopes; loamy surface layer and subsoil, and rock at depths below 72 inches

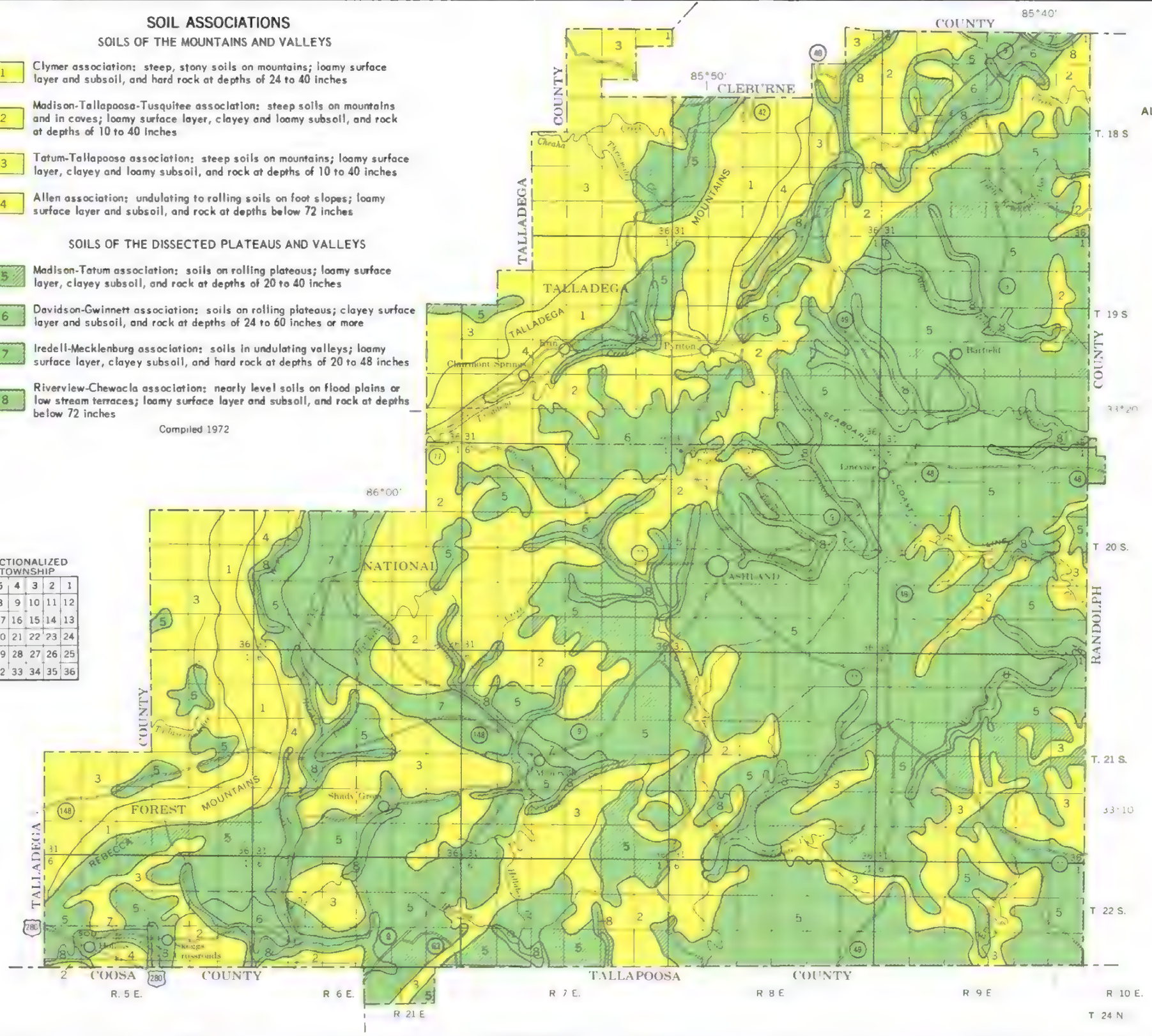
SOILS OF THE DISSECTED PLATEAUS AND VALLEYS

5. Madison-Tatum association: soils on rolling plateaus; loamy surface layer, clayey subsoil, and rock at depths of 20 to 40 inches
6. Davidson-Gwinnett association: soils on rolling plateaus; clayey surface layer and subsoil, and rock at depths of 24 to 60 inches or more
7. Iredell-Mecklenburg association: soils in undulating valleys; loamy surface layer, clayey subsoil, and hard rock at depths of 20 to 48 inches
8. Riverview-Chewacla association: nearly level soils on flood plains or low stream terraces; loamy surface layer and subsoil, and rock at depths below 72 inches

Compiled 1972

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36



N

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

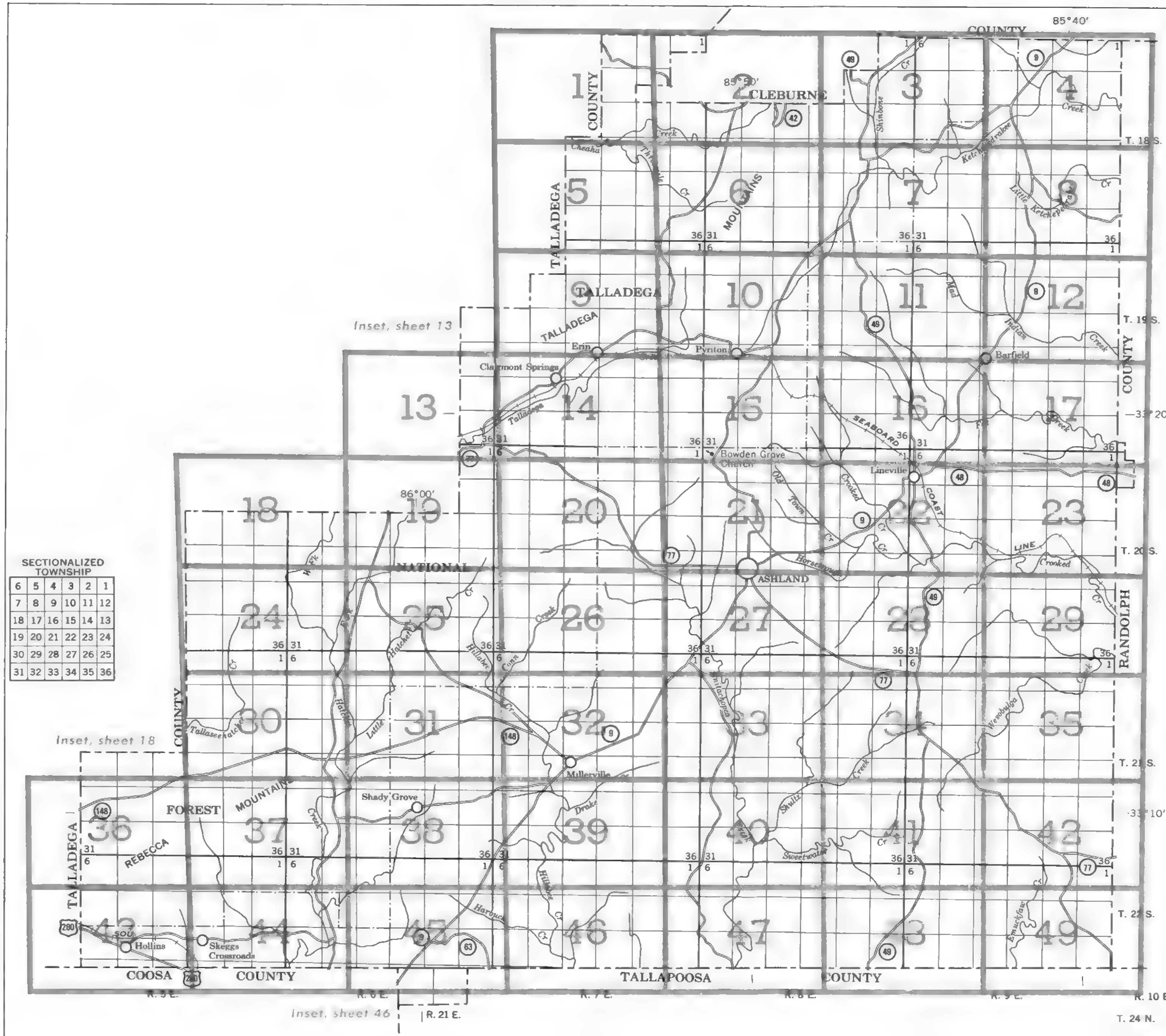
INDEX TO MAP SHEETS

CLAY COUNTY, ALABAMA

Scale 1:190,080

1 0 1 2 3 4 Miles

N



Original text from map sheets:

"This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service and Forest Service, the Alabama Department of Agriculture and Industries, and the Alabama Agricultural Experiment Station. Photobase from 1964 and 1967 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Alabama coordinate system, east zone. Land division corners are approximately positioned on this map."

SOIL LEGEND

The first capital letter is the initial one of the soil name. A second capital letter, B, C, D, or E, shows the slope. Symbols without a slope letter are those of nearly level soils.

SYMBOL	NAME
Ab	Abell loam
AlC	Allen association, rolling *
Ar	Altavista complex
CeC	Cecil association, rolling *
Ch	Chewacla-Riverview complex
ClE	Clymer association, steep *
DgD	Davidson-Gwinnett association, hilly *
GrB	Grover sandy loam, 2 to 6 percent slopes
GrC	Grover sandy loam, 6 to 10 percent slopes
GvC	Grover association, rolling *
HcC	Hiwassee clay, 6 to 10 percent slopes
ImB	Iredell-Mecklenburg association, undulating *
MaB	Madison loam, 2 to 6 percent slopes
MaC	Madison gravelly sandy loam, 6 to 10 percent slopes
MrD	Madison-Riverview association, hilly *
MtE	Madison-Tallapoosa-Tusquitee association, steep *
Re	Riverview silt loam
Ro	Roanoke silt loam
TcD	Tatum-Chewacla association, hilly *
TrE	Tatum-Tallapoosa-Riverview association, steep *
Ts	Toccoa sandy loam

* The delineations are much larger and the composition of these units is more variable than other map units in the county. Mapping has been controlled well enough, however, for the anticipated use of the soils.

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads
- Divided
- Good motor
- Poor motor
- Trail

Highway markers
- National Interstate
- U. S.
- State or county

Railroads
- Single track
- Multiple track
- Abandoned

Bridges and crossings
- Road
- Trail
- Railroad
- Ferry (FY)
- Ford (FORD)
- Grade
- R. R. over
- R. R. under

Buildings
- School
- Church

Mine and quarry
Gravel pit
Power line
Pipeline
Cemetery
Dams
Levee
Tanks
Well, oil or gas
Forest fire or lookout station
Windmill
Located object

BOUNDARIES

- National or state
- County
- Minor civil division
- Reservation
- Land grant
- Small park, cemetery, airport
- Land survey division corners

DRAINAGE

Streams, double-line
- Perennial
- Intermittent

Streams, single-line
- Perennial
- Intermittent
  - Crossable with tillage implements
  - Not crossable with tillage implements
  - Unclassified

Canals and ditches

Lakes and ponds
- Perennial (water, w)
- Intermittent (int)

Spring
Marsh or swamp
Wet spot
Drainage end or alluvial fan

RELIEF

Escarpments
- Bedrock
- Other

Short steep slope
Prominent peak

Depressions

	Large	Small
Crossable with tillage implements		
Not crossable with tillage implements		
Contains water most of the time		

SOIL SURVEY DATA

- Soil boundary and symbol (Dx)
- Gravel
- Stoniness
  - Stony
  - Very stony
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gully

465 000 FEET

1 090 000 FEET

R. 7 E.

TALLADEGA COUNTY

T. 16 S.

TrE

TcD

3

2

10

11

15

14

22

23

21

T A L L A D E G A

N A T I O N A L

F O R E S T

CLEBURNE COUNTY

TALLADEGA COUNTY

Cheaha Creek

Threemile Creek

(Joins sheet 2)

(Joins sheet 5)

1 075 000 FEET

485 000 FEET

N

1 Mile

5000 Feet

Scale 1:20 000

(2)

N

510 000 FEET

1 090 000 FEET

TALLADEGA COUNTY

CLEBURNE COUNTY

TALLADEGA NATIONAL FOREST

T. 18 S.

R. 7 E. | R. 8 E.

Lake Chinnabee

Cheaha Creek

TALLADEGA MOUNTAIN

CHEAHA STATE PARK

TALLADEGA NATIONAL FOREST

TrE

TcD

CIE

Ch

1 Mile

5 000 Feet

Scale 1:20 000

(Joins sheet 1)

(Joins sheet 3)

(Joins sheet 6)

1 075 000 FEET

490 000 FEET

CLAY COUNTY, ALABAMA — SHEET NUMBER 3

3

N

R. 8 E. | R. 9 E.

515 000 FEET

1 090 000 FEET

CLEBURNE COUNTY

CLEBURNE COUNTY

T. 18 S.

T A L L A D E G A

N A T I O N A L F O R E S T

Mitchell Creek

Shinbone Creek

Good Hope Church

Ketchepedrakee Creek

1 Mile

5 000 Feet

Scale 1:20 000

(Joins sheet 2)

(Joins sheet 4)

(Joins sheet 7)

1 075 000 FEET

535 000 FEET

CLAY COUNTY, ALABAMA — SHEET NUMBER 4

4

N

560 000 FEET

1 085 000 FEET

R 9 E

CLEBURNE COUNTY

RANDOLPH COUNTY

T. 18 S.

TALLADEGA NATIONAL FOREST

Bethel Church

Needmore

Ketchepedrakee Creek

Ketchepedrakee Creek

1 Mile

5 000 Feet

Scale 1:20 000

0 0 ¼ 1 000 ½ 2 000 ¾ 4 000 1 5 000

1 075 000 FEET

(Joins sheet 3)

(Joins sheet 8)

540 000 FEET

CLAY COUNTY, ALABAMA — SHEET NUMBER 5

465 000 FEET

1 070 000 FEET

R. 7 E.

(Joins sheet 1)

5

N

Cheaha Creek

Threemile Creek

Barbaree Creek

Horse Creek

Horse Creek

Horse Creek

TALLADEGA COUNTY

T. 18 S.

T. 19 S.

T A L L A D E G A

N A T I O N A L

F O R E S T

21

22

23

26

27

28

33

34

35

4

3

2

TrE

TcD

ClE

Ch

(Joins sheet 6)

(Joins sheet 9)

485 000 FEET

1 060 000 FEET

1 Mile

5 000 Feet

Scale 1:20 000

0 ¼ ½ ¾ 1

5 000 4 000 3 000 2 000 1 000 0

CLAY COUNTY, ALABAMA — SHEET NUMBER 6

6

N

(Joins sheet 2)

R. 7 E. | R. 8 E.

510 000 FEET

1 070 000 FEET

(Joins sheet 7)

T. 19 S. | T. 18 S.

1 Mile

5 000 Feet

Scale 1:20 000

1 060 000 FEET

(Joins sheet 5)

(Joins sheet 10)

490 000 FEET

Cheaha Creek

Threemile Creek

CHEAHA STATE PARK

TALLADEGA NATIONAL FOREST

TALLADEGA MOUNTAIN

TrE TcD CIE AlC At MtE ImB Ch

CLAY COUNTY, ALABAMA — SHEET NUMBER 7

515 000 FEET

R. 8 E. | R. 9 E.

(Joins sheet 3)

1 070 000 FEET

(Joins sheet 6)

(Joins sheet 8)

T. 19 S. | T. 18 S.

1 060 000 FEET

535 000 FEET

(Joins sheet 11)

7

N

1 Mile 5 000 Feet

Scale 1:20 000

0 ¼ ½ ¾ 1

0 1 000 2 000 3 000 4 000 5 000

T A L L A D E G A

N A T I O N A L

F O R E S T

Dempsey

Shinbone Creek

Ketchepedrahee Creek

Ketchepedrahee

Mt Olive Church

Providence Church

22 23 24 19 20 21

27 26 25 30 29 28

34 35 36 31 32 33

3 2 1 6 5 4

CIE TcD TrE AlC Ab ImB MtE MrD Re Ts DgD At HcC Ch

CLAY COUNTY, ALABAMA — SHEET NUMBER 8

(8)

N

R. 9 E.

560 000 FEET

1 070 000 FEET

(Joins sheet 4)

(Joins sheet 7)

(Joins sheet 12)

540 000 FEET

1 Mile

5 000 Feet

Scale 1:20 000

1 060 000 FEET

RANDOLPH COUNTY

T. 19 S. | T. 18 S.

Shiloh Church

Mt Moriah Church

Delta

Clay County Public Lake

Lake Gerald

Little Ketchepedrakee Creek

Ch

21 22 23 24 25 26 27 28 33 34 35 36 4 3 2 1

DgD MrD MtE MdC

CLAY COUNTY, ALABAMA — SHEET NUMBER 9

465 000 FEET

(Joins sheet 5)

1 055 000 FEET

9

N

TALLADEGA COUNTY

T. 19 S.

R. 6 E.
R. 7 E.

T A L L A D E G A M O U N T A I N

N A T I O N A L F O R E S T

TALLADEGA

Horn Branch

Providence Church

Mill Stop Creek

Erin

Talladega Creek

SEABOARD COAST LINE

TrE TcD CtE AlC At HcC MtE Ch

4 3 2 8 9 10 11 13 18 17 16 15 14 24 19 20 21 22 23

(Joins inset, sheet 13)

(Joins sheet 10)

(Joins sheet 14)

485 000 FEET

1 Mile
5 000 Feet

Scale 1:20 000

0 ¼ ½ ¾ 1
1 000 2 000 3 000 4 000 5 000

CLAY COUNTY, ALABAMA — SHEET NUMBER 10

(10)

N

(Joins sheet 6)

R. 7 E. | R. 8 E.

510 000 FEET

1 055 000 FEET

T. 19 S.

(Joins sheet 11)

(Joins sheet 9)

1 045 000 FEET

490 000 FEET

(Joins sheet 15)

1 Mile

5 000 Feet

Scale 1:20 000

0 0 ¼ 1 000 ½ 2 000 ¾ 3 000 1 4 000 5 000

TALLADEGA MOUNTAIN

T A L L A D E G A

N A T I O N A L F O R E S T

SITE NO 11

Mannings Chapel

Campbells Crossroads

Watts Mill

Concord Church

Talladega Creek

Kerr Chapel Creek

SEABOARD COAST LINE

Pyriton

CIE TrE TcD AlC Ab At ImB MtE DgD MrD Ch

CLAY COUNTY, ALABAMA — SHEET NUMBER 11

515 000 FEET

R. 8 E. | R. 9 E.

(Joins sheet 7)

1 055 000 FEET

T. 19 S.

(Joins sheet 10)

(Joins sheet 12)

1 045 000 FEET

(Joins sheet 16)

535 000 FEET

11

N

1 Mile

5 000 Feet

Scale 1:20 000

0 0 ¼ ½ ¾ 1

1 000 2 000 3 000 4 000 5 000

Creek

Creek

Indian

Fairview Church

Oak Grove Church

Barfield

water

ImB At MtE DgD MrD MdC Ch

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

49

CLAY COUNTY, ALABAMA — SHEET NUMBER 12

(Joins sheet 8)

R. 9 E.

560 000 FEET

N

1 Mile

5 000 Feet

Scale 1:20 000

(Joins sheet 11)

1 045 000 FEET

1 055 000 FEET

T. 19 S.

RANDOLPH COUNTY

Blacks Chapel

Barfield

Mad Indian Creek

(Joins sheet 17)

540 000 FEET

440 000 FEET

1 040 000 FEET

455 000 FEET

1 046 000 FEET

R. 6 E. | R. 7 E.

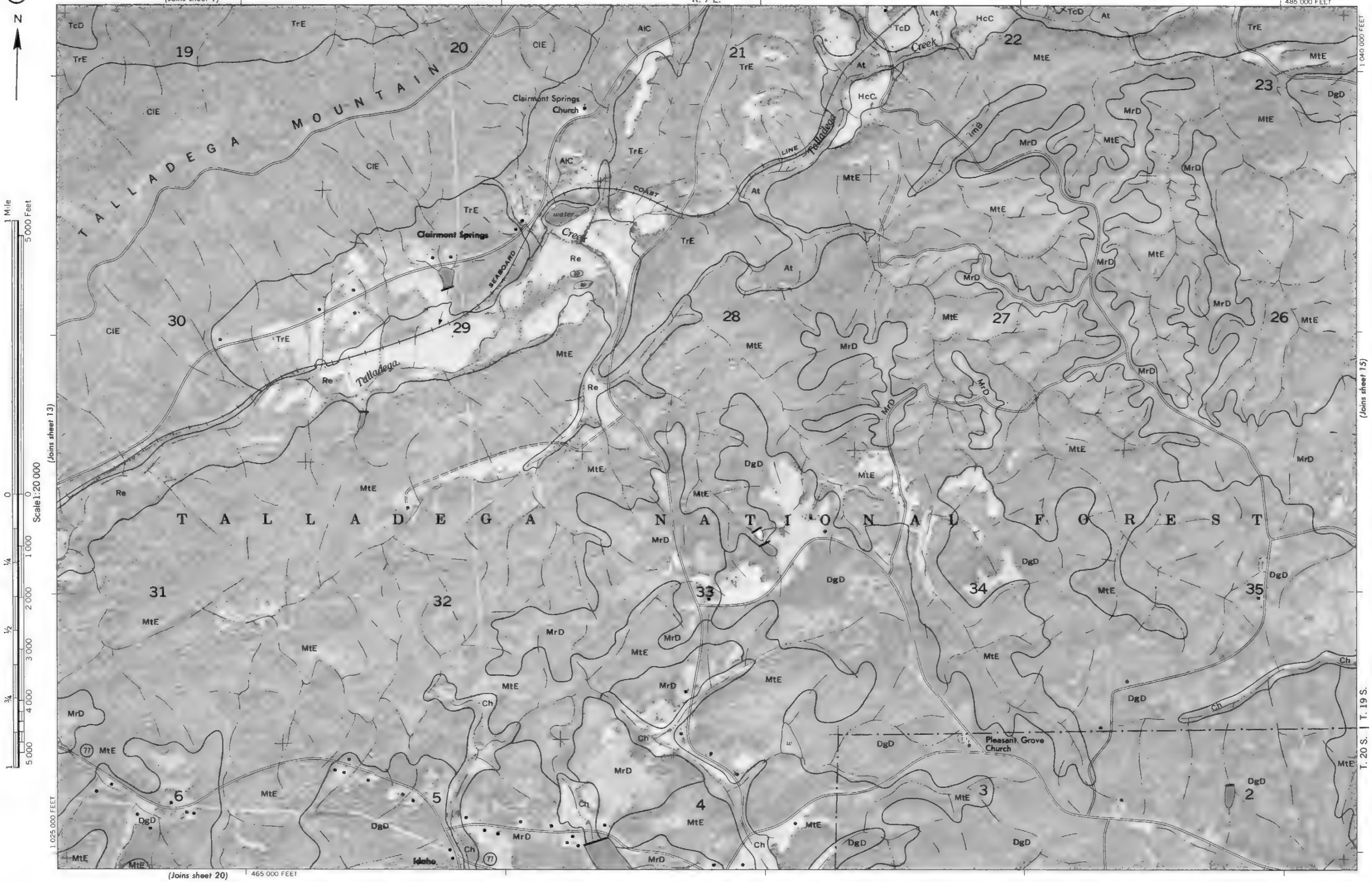
(Joins inset)

N

TrE
TcD
Ch
Branch
Horn
COUNTY
TALLADEGA
13
18
Sap
Creek
Mill
TALLADEGA
NATIONAL FOREST
T. 19 S.
24
19
(Joins sheet 9)
1 043 000 FEET
(Joins upper right)
460 000 FEET

TcD
TrE
24
19
CIE
TALLADEGA
NATIONAL
FOREST
25
30
MOUNTAIN
COUNTY
TALLADEGA
CIE
(Joins sheet 14)
36
31
SEABOARD
Talladega
Creek
Re
MtE
MrD
T. 20 S. | T. 19 S.
1
6
SgD
1 025 000 FEET
(Joins sheet 19)
460 000 FEET

1 Mile
5 000 Feet
Scale 1:20 000
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000


(Joins sheet 9)
R. 7 E.
485 000 FEET
1 040 000 FEET
N
1 Mile
5 000 Feet
Scale 1:20 000
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
(Joins sheet 13)
1 025 000 FEET
(Joins sheet 20)
465 000 FEET
(Joins sheet 15)
T. 20 S. | T. 19 S.
TALLADEGA MOUNTAIN
TALLADEGA NATIONAL FOREST
Clairmont Springs Church
Clairmont Springs
Pleasant Grove Church
Talladega
Creek
SEABOARD COAST LINE
19
20
21
22
23
30
29
28
27
26
31
32
33
34
35
6
5
4
3
2
TcD
TrE
AlC
CtE
At
HcC
MtE
MrD
DgD
Re
Ch

CLAY COUNTY, ALABAMA — SHEET NUMBER 15

15

N

490 000 FEET

1 040 000 FEET

R. 7 E. | R. 8 E.

T. 20 S. | T. 19 S.

(Joins sheet 10)

(Joins sheet 14)

(Joins sheet 16)

(Joins sheet 21)

1 025 000 FEET

510 000 FEET

SEABOARD COAST LINE

TALLADEGA NATIONAL FOREST

Pistrock

Bowden Grove Church

SITE NO 2

SITE NO 3

Ch

1 Mile

5 000 Feet

Scale 1:20 000

CLAY COUNTY, ALABAMA — SHEET NUMBER 16

R. 8 E. | R. 9 E.

N

1 Mile 5 000 Feet

Scale 1:20 000

(Joins sheet 11)

(Joins sheet 15)

(Joins sheet 22)

(Joins sheet 17)

535 000 FEET

1 040 000 FEET

1 025 000 FEET

515 000 FEET

T. 20 S. | T. 19 S.

Bellview Church

New Fellowship Church

Barfield

LINEVILLE

SEABOARD COAST LINE

Fox Creek

MIE

MtE DgD MrD MdC MaB At Ab Ch

CLAY COUNTY, ALABAMA — SHEET NUMBER 17

17

N

(Joins sheet 12)

540 000 FEET

1 040 000 FEET

(Joins sheet 16)

T. 20 S. | T. 19 S.

21 22 23 24 25 26 27 28 33 34 35 36 31 6 1 2 3 4

MrD MdC MtE GvC Ch Ts

GRAVEL PIT

McCollum Church

Pleasant Grove Church

Pine Grove Church

Fox Creek

CLAY COUNTY

RANDOLPH COUNTY

R. 9 E. | R. 10 E.

(Joins sheet 23)

560 000 FEET

1 025 000 FEET

1 Mile 5 000 Feet

Scale 1:20 000

0 ¼ ½ ¾ 1

0 1 000 2 000 3 000 4 000 5 000

N

435 000 FEET

1 025 000 FEET

410 000 FEET

R. 5 E.

TALLADEGA COUNTY

TALLADEGA COUNTY

978 000 FEET

980 000 FEET

T. 21 S.

T A L L A D E G A N A T I O N A L F O R E S T

19 20 21 22

15

TrE TcD TcE

(Joins sheet 30)

395 000 FEET

(Joins sheet 36)

2 000 AND 5 000-FOOT GRID TICKS

1 Mile

5 000 Feet

Scale 1:20 000

0 0

¼ 1 000

½ 2 000

¾ 3 000

1 4 000

5 000

R. 5 E. | R. 6 E.

TALLADEGA COUNTY

AIC Ch TrE TcD CtE AtE ImB At

TALLADEGA COUNTY

Ch

Creek

Eumuhee

Chambers Springs

Horn Valley Church

Hatchet Creek

Valley Fork

West Horn

Flat Top Ridge

T A L L A D E G A N A T I O N A L F O R E S T

TALLADEGA MOUNTAIN

13 14 15 17 18 19 20 22 23 24

T. 20 S.

1 010 000 FEET

415 000 FEET

(Joins sheet 24)

(Joins sheet 19)

CLAY COUNTY, ALABAMA — SHEET NUMBER 19

440 000 FEET

1 025 000 FEET

(Joins sheet 13)

R. 6 E. | R. 7 E.

19

N

TALLADEGA COUNTY

T. 20 S.

Top Ridge

Flat

Hatchet Creek

East Fork

Antioch Church

T A L L A D E G A

N A T I O N A L F O R E S T

1 010 000 FEET

460 000 FEET

(Joins sheet 18)

(Joins sheet 20)

(Joins sheet 25)

1 Mile 5 000 Feet

Scale 1:20 000

0 1/4 1/2 3/4 1

0 1 000 2 000 3 000 4 000 5 000

(Joins sheet 14)

R. 7 E.

485 000 FEET

1 025 000 FEET

T. 20 S.

(Joins sheet 21)

(Joins sheet 19)

1 010 000 FEET

(Joins sheet 26)

465 000 FEET

N

1 Mile

5 000 Feet

Scale 1:20 000

0 ¼ ½ ¾ 1

0 1 000 2 000 3 000 4 000 5 000

T A L L A D E G A

N A T I O N A L

F O R E S T

Idaho

Pleasant Hill Church

water

GRAVEL PIT

DgD MrD MtE HcC MdC Ch

5 4 3 2 6 7 8 9 10 11 18 17 16 15 14 19 20 21 22 23

CLAY COUNTY, ALABAMA — SHEET NUMBER 21

490 000 FEET

R. 7 E. | R. 8 E.

(Joins sheet 15)

1 025 000 FEET

T. 20 S.

(Joins sheet 20)

(Joins sheet 22)

1 010 000 FEET

(Joins sheet 27)

510 000 FEET

21

N

1 Mile

5 000 Feet

Scale 1:20 000

Olive Branch Church

Macedonia Church

Grabun

CLAY COUNTY AIRPORT

ASHLAND
(county seat)

Clay County Courthouse

MtE DgD HcC MaB MdC MrD Ch

N

R. 8 E. | R. 9 E.

535 000 FEET

(Joins sheet 16)

LINEVILLE

Crooked Creek

Horsebrough Creek

Old Town Creek

Crooked Creek

Ts Creek

SEABOARD COAST LINE

GRAVEL PIT

1 Mile
5 000 Feet

Scale 1:20 000

1 010 000 FEET

1 020 000 FEET

T. 20 S.

(Joins sheet 21)

(Joins sheet 23)

(Joins sheet 28)

515 000 FEET

CLAY COUNTY, ALABAMA — SHEET NUMBER 23

(Joins sheet 17)

540 000 FEET

R. 9 E. | R. 10 E.

23

N

1 020 000 FEET

T. 20 S.

(Joins sheet 22)

1 010 000 FEET

560 000 FEET

(Joins sheet 29)

RANDOLPH COUNTY

1 Mile

5 000 Feet

Scale 1:20 000

Spring Hill Church

Shady Grove Church

Crooked Creek

SEABOARD COAST LINE

Berwick

MrD MdC MtE Ts Ch GrB GrC Ro GvC TrE TcD ToD At

CLAY COUNTY, ALABAMA — SHEET NUMBER 24

(24)

N

R. 5 E. | R. 6 E.

(Joins sheet 18) | 435 000 FEET

1 Mile

5 000 Feet

Scale 1:20 000

995 000 FEET

1 005 000 FEET

415 000 FEET

(Joins sheet 30)

(Joins sheet 25)

T. 21 S. | T. 20 S.

TALLADEGA - COUNTY

TALLADEGA NATIONAL FOREST

TALLADEGA MOUNTAIN

Flat Top Ridge

Horn Valley

Hatcher Creek

West Fork

East Fork

Swept Creek

Talladega Creek

Hatchet Creek

GRAVEL PIT

G.P.

22 23 24 19 20

27 26 25 30 29

34 35 36 31 32

3 2 1 6 5

TrE TcD CIE AlC At ImB Re

CLAY COUNTY, ALABAMA — SHEET NUMBER 25

440 000 FEET

R. 6 E. | R. 7 E.

(Joins sheet 19)

25

N

1 005 000 FEET

T. 21 S. | T. 20 S.

(Joins sheet 24)

(Joins sheet 26)

995 000 FEET

(Joins sheet 31)

460 000 FEET

T A L L A D E G A

N A T I O N A L F O R E S T

Colata

Bethlehem Church

Hatchet Creek Church

Gage

SITE NO 1

Hatchet Creek

East Fork

Little Hatchet Creek

Little Ch

Ch

Ro

ImB

MtE

MrD

At

DgD

TcD

1 Mile

5 000 Feet

Scale 1:20 000

N

R. 7 E.

485 000 FEET

1 005 000 FEET

(Joins sheet 20)

(Joins sheet 25)

(Joins sheet 27)

(Joins sheet 32)

465 000 FEET

995 000 FEET

T. 21 S. | T. 20 S.

1 Mile

5 000 Feet

Scale 1:20 000

0 0 ¼ ½ ¾ 1

1 000 2 000 3 000 4 000 5 000

T A L L A D E G A

N A T I O N A L F O R E S T

20 21 22 23

19 30 29 28 27 26

31 32 33 34 35

6 5 4 3 2

MtE MrD MdC DgD GvC Ch

POLE BRIDGE CEMETERY

GRAVEL PIT

GRAPHITE QUARRY

Liberty Church

Fairview Church

Primitive Church

Creek

SITE NO 2

SITE NO 1

G.P.

Ts

R. 7 E. | R. 8 E.

CLAY COUNTY, ALABAMA — SHEET NUMBER 27

490 000 FEET

(Joins sheet 21)

27

N

1 005 000 FEET

(Joins sheet 26)

T. 21 S. | T. 20 S.

ASHLAND (county seat)

Enitachopco Creek

Liberty Hill Church

Wrights Chapel

Lystra Church

(Joins sheet 28)

995 000 FEET

(Joins sheet 33)

510 000 FEET

1 Mile 5 000 Feet

Scale 1:20 000

CLAY COUNTY, ALABAMA — SHEET NUMBER 28

(28)

N

R. 8 E. | R. 9 E.

535 000 FEET

(Joins sheet 22)

(Joins sheet 27)

(Joins sheet 29)

(Joins sheet 34)

515 000 FEET

995 000 FEET

1 005 000 FEET

T. 20 S.

T. 21 S.

1 Mile

5000 Feet

Scale 1:20 000

0 0 ¼ 1 000 2 000 ½ 3 000 ¾ 4 000 1 5 000

Horsetrough Creek

GRAVEL PIT

Shiloh Church

Colemans Chapel

Providence Church

MaB MdC MrD MtE GrC GvC TcD Ts Ch G.P.

1 2 3 4 5 6 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

CLAY COUNTY, ALABAMA — SHEET NUMBER 29

29

N

(Joins sheet 23)

540 000 FEET

R. 9 E.

1 005 000 FEET

(Joins sheet 28)

T. 20 S.

T. 21 S.

995 000 FEET

560 000 FEET

(Joins sheet 35)

SEABOARD COAST LINE

Crooked Creek

RANDOLPH COUNTY

Denny

Cragford

Weogufka Creek

GRAVEL PIT

SITE NO 16

1 Mile

5 000 Feet

Scale 1:20 000

30

CLAY COUNTY, ALABAMA — SHEET NUMBER 30

R. 5 E. | R. 6 E.

(Joins sheet 24)

435 000 FEET

990 000 FEET

T. 21 S.

N

1 Mile

5 000 Feet

Scale 1:20 000

0 ¼ ½ ¾ 1

0 1 000 2 000 3 000 4 000 5 000

980 000 FEET

415 000 FEET

(Joins inset, sheet 18)

(Joins sheet 37)

(Joins sheet 31)

TALLADEGA COUNTY

T A L L A D E G A

N A T I O N A L

F O R E S T

TALLADEGA MOUNTAIN

REBECCA MOUNTAINS

Talaseehatchee Creek

Hatchet Creek

Hatchet Creek

Bull Gap

GRAVEL PIT

TrE TcD CIE AlC At Re Ch Ro G.P.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

440 000 FEET

990 000 FEET

T. 21 S.

(Joins sheet 25)

R. 6 E. | R. 7 E.

31

N

T A L L A D E G A N A T I O N A L F O R E S T

Creek

Hatchet

Little

Hillabee

Comn

Marvin Chapel

SITE NO 1

1 Mile

5 000 Feet

Scale 1:20 000

(Joins sheet 30)

(Joins sheet 32)

(Joins sheet 38)

460 000 FEET

980 000 FEET


(Joins sheet 26)
R. 7 E.
485 000 FEET
990 000 FEET
T. 21 S.
TALLADEGA
NATIONAL FOREST
SITE NO 1
SITE NO 4
SITE NO 6
Pleasant Hill Church
Big Spring Church
Millerville
Comn Creek
Hillabee Creek
Drake Creek
MtE
MrD
ImB
TcD
TrE
DgD
GvC
Ch
(Joins sheet 31)
(Joins sheet 33)
(Joins sheet 39)
980 000 FEET
465 000 FEET
1 Mile
5 000 Feet
Scale 1:20 000

(Joins sheet 27)

(33)

N

490 000 FEET

990 000 FEET

T. 21 S.

(Joins sheet 32)

(Joins sheet 34)

980 000 FEET

(Joins sheet 40)

510 000 FEET

1 Mile 5 000 Feet

Scale 1:20 000

0 ¼ ½ ¾ 1

0 1 000 2 000 3 000 4 000 5 000

Big Spring Church

New Prospect Church

Enitachopco Creek

CLAY COUNTY, ALABAMA — SHEET NUMBER 34

N

(Joins sheet 28)

R. 8 E. | R. 9 E.

535 000 FEET

990 000 FEET

T. 21 S.

1 Mile
5 000 Feet

Scale 1:20 000

0 0 ¼ 1 000 ½ 2 000 ¾ 4 000 1 5 000

(Joins sheet 33)

980 000 FEET

(Joins sheet 35)

(Joins sheet 41)

515 000 FEET

Gibsonville

Sardis Church

County Line Church

Mellow Valley

Shultz Creek

Wesobulga Creek

GRAVEL PIT

CLAY COUNTY, ALABAMA — SHEET NUMBER 35

535 000 FEET

(Joins sheet 29)

R. 9 E.

35

N

990 000 FEET

T. 21 S.

(Joins sheet 34)

Creek

Corinth Church

Wesobulga

RANDOLPH COUNTY

980 000 FEET

(Joins sheet 42)

555 000 FEET

1 Mile

5,000 Feet

Scale 1:20 000

N

R. 5 E.

(Joins inset, sheet 18)

410 000 FEET

975 000 FEET

(Joins sheet 37)

T. 22 S.

T. 21 S.

960 000 FEET

390 000 FEET

(Joins sheet 43)

1 Mile

5 000 Feet

Scale 1:20 000

0 0 1/4 1/2 3/4 1

1 000 2 000 3 000 4 000 5 000

19 20 21 22

30 29 28 27

31 32 33 34

6 5 4 3

7

TALLADEGA COUNTY

TALLADEGA MOUNTAINS NATIONAL REBECCA FOREST

Rocky Fire Tower

TrE TcD ClE Ch Oh

R E B E C C A

M O U N T A I N S

Hollins Fire Tower

T A L L A D E G A N A T I O N A L F O R E S T

Hatchet Creek

GRAVEL PIT

22 23 24 19 20 27 26 25 30 29 34 35 36 31 32 3 2 1 6 5

TcD TrE ClE AlC Ch Re At Ab DgD ImB

N

R. 6 E. | R. 7 E.

460 000 FEET

975 000 FEET

(Joins sheet 31)

(Joins sheet 39)

(Joins sheet 37)

960 000 FEET

440 000 FEET

(Joins sheet 45)

T. 22 S. | T. 21 S.

1 Mile

5 000 Feet

Scale 1:20 000

0 0 ¼ 1 000 ½ 2 000 ¾ 4 000 1 5 000

TALLADEGA NATIONAL FOREST

Shady Grove

Thatchet Creek

water

Ro At AlC Re TrE TcD DgD Ch

20 21 22 23 24 19 29 28 27 26 25 30 32 33 34 35 36 31 5 4 3 2 1 6

CLAY COUNTY, ALABAMA — SHEET NUMBER 39

465 000 FEET

R. 7 E.

(Joins sheet 32)

39

N

975 000 FEET

T. 22 S. | T. 21 S.

(Joins sheet 38)

(Joins sheet 40)

960 000 FEET

485 000 FEET

(Joins sheet 46)

Hillabee Creek

Drake Ch

Ch

Creek

Hillabee Creek

Ch

Scale 1:20 000

1 Mile

5 000 Feet

CLAY COUNTY, ALABAMA — SHEET NUMBER 40

N

(Joins sheet 33) | R. 7 E. | R. 8 E.

510 000 FEET

1 975 000 FEET

1 Mile

5 000 Feet

Scale 1:20 000

0 0 ¼ 1 000 ½ 2 000 ¾ 4 000 1 5 000

(Joins sheet 39)

1 960 000 FEET

(Joins sheet 47)

490 000 FEET

(Joins sheet 41)

T. 22 S. | T. 21 S.

Enitachopco Creek

Shultz Creek

Sweetwater Creek

Mt Moriah Church

Mt Zion Church

Bluff Spring

GRAVEL PIT

G.P.

23 24 19 20 21 22

26 25 30 29 28 27

35 36 31 32 33 34

2 1 6 5 4 3

MrD MtE GvC Ro GrB Ts At Ab TcD TrE GrC

CLAY COUNTY, ALABAMA — SHEET NUMBER 41

41

N

R. 8 E. | R. 9 E.

T. 22 S. | T. 21 S.

515 000 FEET

975 000 FEET

960 000 FEET

535 000 FEET

(Joins sheet 34)

(Joins sheet 40)

(Joins sheet 42)

(Joins sheet 48)

Shultz Creek

Sweetwater Creek

Mt Carmel Church

1 Mile

5 000 Feet

Scale 1:20 000

CLAY COUNTY, ALABAMA — SHEET NUMBER 42

(Joins sheet 34)

R. 9 E.

560 000 FEET

975 000 FEET

N

1 Mile

5 000 Feet

Scale 1:20 000

0 0 ¼ 1 000 ½ 2 000 ¾ 3 000 1 4 000 5 000

(Joins sheet 41)

960 000 FEET

535 000 FEET

(Joins sheet 49)

RANDOLPH COUNTY

T. 22 S. | T. 21 S.

Blackjack Fire Tower

Mt Olive Church

21 22 23 24 25 26 27 28 33 34 35 36 4 3 2 1

TcD TrE MaB MdC MrD Ch

CLAY COUNTY, ALABAMA — SHEET NUMBER 43

43

N

390 000 FEET

960 000 FEET

R. 5 E.

(Joins sheet 36)

T A L L A D E G A N A T I O N A L F O R E S T

T. 22 S.

TALLADEGA COUNTY

COOSA COUNTY

(Joins sheet 44)

Hollins School

Hollins

Weoguffka Creek

SOUTHERN

280

G.P.

Ch

CIE

TcD

TrE

ImB

At

AlC

MtE

5 6 7 8 9 10 4 3 17 16 15 18 19 20 21 22

945 000 FEET

410 000 FEET

1 Mile

5 000 Feet

Scale 1:20 000

(44)

CLAY COUNTY, ALABAMA — SHEET NUMBER 44

R. 5 E. | R. 6 E.

435 000 FEET

960 000 FEET

T. 22 S.

(Joins sheet 37)

(Joins sheet 43)

(Joins sheet 45)

945 000 FEET

415 000 FEET

N

1 Mile 5 000 Feet

Scale 1:20 000

0 ¼ ½ ¾ 1

0 1 000 2 000 3 000 4 000 5 000

TALLADEGA NATIONAL FOREST

COOSA COUNTY

Brownsville

Hatchet Creek Church

Skeggs Crossroads

Hatchet Creek

SOUTHERN

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

TcD TrE ImB MtE DgD Re MrD Ch At GP

N

440 000 FEET

960 000 FEET

R. 6 E. | R. 7 E.

(Joins sheet 38)

T. 22 S. | T. 24 S.

R. 21 E.

(Joins inset, sheet 46)

460 000 FEET

945 000 FEET

(Joins sheet 44)

(Joins sheet 46)

1 Mile

5 000 Feet

Scale 1:20 000

0 1 000 2 000 3 000 4 000 5 000

¼ ½ ¾

T A L L A D E G A

N A T I O N A L

F O R E S T

COOSA COUNTY

TALLAPOOSA COUNTY

Oaks Chapel

Pleasant Home Church

New Prospect Church

Elias

TcD TrE MrD MtE CeC ImB Re Ro Ch G.P.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 20 21 22 23 24

N

(Joins sheet 39)

R. 7 E.

485 000 FEET

TrE TcD CeC MtE MrD Ro

6 5 4 3 2 1

7 8 9 10 11 12

13 14 15 16 17 18

Guthries Chapel

Hillabee Creek

Harbuck Creek

Pinkneyville

GRAVEL PIT

(Joins sheet 45)

TALLAPOOSA COUNTY

955 000 FEET

T. 22 S.

(Joins sheet 47)

1 Mile

5 000 Feet

Scale 1:20 000

0 ¼ ½ ¾ 1

0 1 000 2 000 3 000 4 000 5 000

945 000 FEET

R. 21 E. (Joins sheet 45)

455 000 FEET

CO

COOSA

MrD MtE CeC Ro

6 5

TALLAPOOSA COUNTY

942 000 FEET

943 000 FEET

T. 24 N.

445 000 FEET

1 000 AND 5 000-FOOT GRID TICKS

465 000 FEET

R. 7 E. | R. 8 E.

490 000 FEET

960 000 FEET

(Joins sheet 40)

47

N

T. 22 S.

(Joins sheet 46)

(Joins sheet 48)

Entiachopco Creek

Bethel Church

TALLAPOOSA COUNTY

945 000 FEET

510 000 FEET

1 Mile

5 000 Feet

Scale 1:20 000

CLAY COUNTY, ALABAMA — SHEET NUMBER 48

(48)

N

(Joins sheet 41)

R. 8 E. | R. 9 E.

535 000 FEET

955 000 FEET

T. 22 S.

(Joins sheet 49)

(Joins sheet 47)

945 000 FEET

515 000 FEET

1 Mile

5 000 Feet

Scale 1:20 000

TrE

TcD

Ch

Mt Pisgah Church

Bethany Church

TALLAPOOSA COUNTY

CLAY COUNTY, ALABAMA — SHEET NUMBER 49

49

535 000 FEET

(Joins sheet 42)

R. 9 E.

N

955 000 FEET

T. 22 S.

(Joins sheet 48)

945 000 FEET

555 000 FEET

1 Mile

5 000 Feet

Scale 1:20 000

0 0 ¼ ½ ¾ 1

1 000 2 000 3 000 4 000 5 000

Mt Gilead Church

Sikesville

Motley

Creek

Emuckfaw

TALLAPOOSA COUNTY

RANDOLPH COUNTY

1 2 3 4 9 10 11 12 13 14 15 16

TrE TcD MrD MdC Ch